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ORGAN OF THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

Editor—HENRY E. SIGERIST
Associate Editor—GENEVIEVE MILLER

VOLUME XVI OCTOBER, 1944 NUMBER 3

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THE ATTITUDE OF THE CHURCH TOWARDS DISSECTION BEFORE 1500

MARY NIVEN ALSTON

The official attitude of the Church in modern times toward the question whether the Church favored or hindered the dissection of the human body during the Middle Ages and the consequent development of the science of anatomy may be found expressed by Prospero Lambertini (later Pope Benedict XIV) in his "notificazione" printed in 1737.[1] He says in substance that the Church always favored the arts and sciences and would not have opposed anything so beneficial to human progress as dissection. The question seems, however, one more of history than of doctrine. The same approach is to be seen in the article on anatomy in the *Catholic Encyclopedia* which is signed by Dr. Fielding H. Garrison, the historian of medicine.[2] Wickersheimer also says that the Church did not in any way hinder dissection and refers to von Toeply as proving the point.[3] In fact, with the exception of Dr. Andrew D. White, I have found no

[1] This is quoted by G. Martinotti in *Prospero Lambertini e lo Studio dell'Anatomia in Bologna*, Bologna, 1911, p. 5.

[2] *Catholic Encyclopedia*, revised and enlarged edition; editors Pace, Walsh, Guilday, Wynne, and Kelly, N. Y., 1935.

[3] Ernest Wickersheimer, *Les premières Dissections de la Faculté de Médecine de Paris*, Paris, 1910, p. 1.

recent author who maintains the argument that the Church opposed dissection. Dr. White says:

> . . . a more serious stumbling-block, hindering the beginnings of modern medicine and surgery, was a theory regarding the unlawfulness of meddling with the bodies of the dead. . . . There came a dread of mutilating the body in such a way that some injury might result to its final resurrection at the Last Day, . . . To these arguments was now added another . . . the maxim that "the Church abhors the shedding of blood." On this ground, in 1248, the Council of Le Mans forbade surgery to monks . . . at the end of the thirteenth century came the most serious blow of all; for it was then that Pope Boniface VIII, . . . issued a decretal forbidding a practice which had come into use during the Crusades, namely, the separation of the flesh from the bones of the dead whose remains it was desired to carry back to their own country . . . it impressed upon the mind of the Church the belief that all dissection is sacrilege. . . .[4]

A summary of the older medical works which state this side of the case may be found in an article of del Gaizo's.[5] Other recent writers on the subject have gone to considerable pains to disprove the older theory. I think, however, it is worth while to review the evidence again and see to just what it leads.

Such evidence is not easy to obtain. Many documents have been used ingeniously to furnish indirect light on the subject, but there is no direct pronouncement by authority contemporary with the beginnings of anatomy as a science. The canon law furnishes nothing but the much discussed bull "de Sepulturis"[6] and the following quotation from St. Augustine in *De Agenda Cura pro Mortuis*:

> More diligently however doeth each man these things [that is, offices for the dead] for his own near and dear friends, in order that they may be likewise done unto him by his. But as for the burying of the body, whatever is bestowed on that, is no aid of salvation, but an office of humanity according to that affection by which "no man hateth his own flesh."[7]

---

[4] Andrew D. White. *A History of the Warfare of Science with Theology in Christendom*, N. Y., 1896, pp. 31-32.

[5] *Dell'Azione dei Papi sul Progresso dell'Anatomia e della Chirurgia sino al 1600*, La Scuola Cattolica, Milano, 1893.

[6] See below.

[7] P. 550 in *A Select Library of the Nicene and Post Nicene Fathers of the Christian Church*, edited by Philip Schaff. *De Agenda Cura Pro Mortuis*, translated by the Rev. H. Browne, N. Y., 1917. The Latin in the *Corpus Juris Canonici*, edited by Petrus and Franciscus Pithoeus, Paris, 1779, Vol. I, p. 250, reads, "Diligentius tamen fecit hoc quisque pro necessariis suis, quo pro illo fiat similiter a suis. Corpori autem humano quidquid impenditur non est praesidium salutis sed humanitatis officium, secundum affectum, quo nemo umquam carnem suam odio habet." Decreti II, Causa XIII, Quaestio II, XIX.

This seems to rule out the question of whether a too literal interpretation of the resurrection of the body might not be involved. Nor have I found anything to contradict this in either the other works of St. Augustine or in Tertullian's "Resurrectio Carnis." As to anything further in the form of Church Law, none of the available collections of Papal bulls contained anything pertinent. In fact, comparatively little is said in the canon about dead bodies and their treatment. Had the dissection of the human body been considered an offense, it might have appeared in the handbooks of penance. But I have been unable to find it there. Nor is there any mention of dissection in the works of Henry C. Lea on the subject of the Inquisition.[8] Had the Inquisition been in the habit of trying to eradicate it, he would surely have found some record of that fact. Also, there is no case in the records of the Ecclesiastical Court of Paris for the years 1384-87 of anyone being haled to court on account of illegal practice of anatomy.[9]

No particular information can be gained from the *Surgery* of William of Congenis [10] and very little from the works of Henri de Mondeville.[11] As to secondary works, I used the medical and surgical histories of Gurlt, Pagel, Haeser, Neuburger, Puccinotti, and Charles Singer, which served as guides to primary material.[12] Neither *Janus* nor the *Studien zur Geschichte der Medizin* yielded anything directly related to the subject.[13]

Several writers have tried to blame the backwardness of Western dissection on a Koranic prohibition of it—since the Arab physician would have brought his prejudices as well as his learning to the West.[14] But there is nothing in the Koran which could be interpreted that way. I am

[8] See Henry C. Lea. *A History of the Inquisition in Spain*, N. Y., 1906-07; *A History of the Inquisition in the Middle Ages*, N. Y., 1887; *Superstition and Force*, Philadelphia, 1892.

[9] *Régistre des Causes Civiles de l'Officialité Épiscopale de Paris*, edited by Joseph Petit, Paris, 1919.

[10] Pagel, Julius Leopold. *Die Chirurgie des Wilhelm von Congeinna*, Berlin, 1891.

[11] de Mondeville, Henri. *Die Chirurgie*, edited by Pagel, Berlin, 1892, and *Die Anatomie*, also edited by Pagel, Berlin, 1899.

[12] Gurlt, E. *Geschichte der Chirurgie*, Berlin, 1899.
Pagel, Julius L. *Geschichte der Medizin*, Berlin, 1889.
Haeser, Heinrich. *Lehrbuch der Geschichte der Medizin*, Jena, 1875.
Neuburger, Max. *Geschichte der Medizin*, Stuttgart, 1906.
Puccinotti, Francesco. *Storia della Medicina*, Livorno, 1855.
Singer, Charles. *Evolution of Anatomy*, London, 1925.

[13] *Janus*, 1840-1848, 1896-1940; *Studien zur Geschichte der Medizin*, 1907-1937 [*cf.*, however, G. Wolff, Leichen-Besichtigung und -Untersuchung bis zur Carolina als Vorstufe gerichtlicher Sektion, *Janus*, 1938, pp. 225 ff.]—Ed.

[14] See articles of del Gaizo and Wickersheimer cited above.

not expert enough to deny that there may be some Mohammedan tradition to this effect, but it does not come from Islamic scripture. The only other source on early dissections, probably, would be the statutes of various universities. This would, however, merely constitute the negative evidence that they were not prevented from such study, so I have not tried to find many of them. There is a good list of some of the earliest in the article mentioned above in th *Catholic Encyclopedia.*

When we turn to the evidence for the case that the Church opposed dissection, the first document to examine seems to be the bull of Boniface VIII, " de Sepulturis," issued in the year 1300 forbidding under pain of excommunication the boiling of the bodies of persons who had died abroad in order to separate the flesh from the bones and send the latter home for burial—a practice which had developed especially among the crusaders, although the papal bull was not issued until after the fall of Acre in 1291 had marked the close of the crusading period proper. Any body so treated was not to be buried in consecrated ground. The pope's objection to the practice was that it was cruel, inhuman and barbaric. The clause about not burying the body would no doubt have put a stop to this custom, since the object of it was to prepare the bones for burial.[15]

At first glance it might puzzle anyone to see the exact bearing of this bull on the subject. But from a passage in Mondino's *Anatomy* it appears curiously enough that boiling a body was part of the anatomical process. He says: " The bones which are below the ' os basilare ' cannot well be seen unless they are removed and boiled, but owing to the sin involved in this I am accustomed to pass them by." [16]

Thus it appears that to the extent which boiling was useful to anatomists the bull must have discouraged them. I think that the bull, however, is innocent in intention. The disgusting process described had been applied to the body of Saint Louis among others.[17] The Pope might well have thought it unseemly. Also del Gaizo suggests that the bones so treated might have tended to become unofficial relics. One of the Church's troubles to the present day is with unapproved cults. Nor would it seem

[15] For this bull see the Appendix.

[16] From the *Fasciculo di Medicina,* Venice, 1493, edited by Charles Singer, Part I, Florence, 1925, p. 96. The Latin reads: " Ossa autem alia quae sunt infra os basilare non bene ad sensum apparent nisi ossa illa decoquantur, sed propter peccatum dimittere consuevi verum est quod de mandibularum ossibus potes videre principium et finem. . . ." From Berengario da Carpi, Jacopo, *Commentaria cum amplissimis additionibus super anatomia Mundini una cum textu eiusdem in pristinum & verum nitorem redacto.* Impresse Bononiae. M.D.XXI CCCCLXXVIr.

[17] See *Catholic Encyclopedia* article on anatomy.

that this bull continued to discourage anatomists. Mondino wrote in 1316. By 1363, Guy de Chauliac was saying: "Nous faisons aussi l'anatomie es corps dességichez au Soleil, ou consumez en terre, ou fondus en eau courante ou bouillante . . . ," [18] without any suggestion that such a thing had ever been prohibited. Yet the bull has been taken to forbid anatomy. The only instance where I can find the statement that the Church ever forbade dissection is in the *Anatomy* of Guido de Vigevano. He says:

> Because it is forbidden by the Church to perform an anatomy on the human body, and as no one can know the art of medicine fully, unless he knows anatomy first . . I will show the anatomy of the human body plainly, by correctly painted figures, just as they are in the human body, so that that which is beneath will appear manifestly in the pictures and better than it can be seen in the human body, because when we perform an anatomy on a man, we have to hurry on account of the decomposition, thus it is enough for the doctors to see the inner parts enlarged, just as they lie. . . .

Yet later he says, ". . . believe me expert, because I have performed them [anatomies] many and many a time on human bodies." [19]

Certainly the above is a very plain statement. It is not a question here of interpreting a bull about burials to apply to scientific pursuits. It says in so many words that the Church forbids dissection. And yet the author says not many lines farther on that he has performed many anatomies. It is known that he was at Bologna before he taught at Paris. If the prohibition were merely local to Paris, the discrepancy might be explained.

We might be able to determine the Church's attitude toward dissection, if there were full records of the early ones. But we cannot even be sure when the first were. The earliest mention of anatomies is in a decree of Frederick II in 1240,[20] where he orders that a doctor must produce testi-

[18] *La grande Chirurgie* de Guy de Chauliac composée en l'an 1363, edited by E. Nicaise, Paris, 1890, p. 30.

[19] The Latin reads: "Quia prohibitum est ab Ecclesia facere anothomiam in corpore humano et cum ars medicine complete sciri non potest, nisi quis prius sciverit anothomiam . . . demonstrabo anothomiam corporis humani patenter et aperte, per figuras depinctas recte, sicut se habent membra in corpore humano, ut inferius per figuras manifeste apparebit et satis melius quam in corpore humano videri poterit, quia, cum facimus anothomiam in homine, oportet nos cito expedire propter fetorem, ideo sufficit medicis solum videre membra interiora grosso modo, prout jacent. . . ." Yet later he says, "credatur mihi experto, cum pluribus et pluribus vicibus ipsam [anothomiam] feci in corpore humano." This is taken from "L'Anatomie de Guido de Vigevano," par E. Wickersheimer in *Archiv für Geschichte der Medizin* (Sudhoff ed.), no. 7, p. 1, Leipzig, 1914, p. 5, a few lines further on.

[20] The Latin reads: "De Medicis. Salubri etiam constitutione sancimus, ut nullus chirurgicus ad practicam admittatur, nisi testimoniales literas offerat magistrorum in

mony that he has studied medicine for at least a year and has learned anatomy before being admitted to practice. As evidence of the Church's position, or even of the position of a typical Christian prince, this decree is a little inconclusive. Whereas Frederick was generally in opposition to the Papacy politically and was several times excommunicated for that reason,[21] on the other hand he seems to have possessed orthodox religious views, judging from his edicts against heresy. What the decree does show is that dissection was an established practice in some medical schools.

The first specific anatomy mentioned, or rather autopsy, is in Salimbene's chronicle. If Salimbene, who was a friar, were to comment on the wickedness of such a proceeding, it would be good evidence indeed, but, alas, he is infinitely more interested in the price of chickens. In discussing the hard winter of 1286, he remarks on the terrible sickness of men and chickens, and then quite by the way says that a doctor opened up a man's body and found precisely the same signs that he had previously found in a fowl. Apparently Salimbene accepts the experiment as a quite natural procedure, for he continues to discuss the price of chickens.[22]

The next autopsy of which we have the record was a postmortem at Bologna in 1302. I cannot find a full account of this case, but it evidently was a judicial proceeding ordered in a question of poisoning.[23] The doctors brought in a verdict of natural death. An autopsy is of course not equivalent to a public demonstration of anatomy, but both processes involve considerable mutilation, as does embalming.

Shortly afterward there was a case of a prosecution for body snatching at Bologna, in 1319. Unfortunately it is not recorded what the verdict was, nor does Medici, who prints the document, tell us before what court

medicinali facultate legentium, quod per annum saltem in ea parte medicinae studuerit, quae chirurgiae instruit facultatem; et praesertim anatomiam humanorum corporum in scholis didicerit, et sit in ea parte medicinae perfectus; sine qua nec incisiones salubriter fieri poterunt, nec factae curari." Quoted from E. Gurlt, *Geschichte der Chirurgie*, Vol. I, Berlin, 1890, p. 722, who quotes J. L. A, Huillard-Breholles, *Historia diplomatica Friderici secundi sive constitutiones, privilegia etc.* T. IV, Paris, 1854, p. 235, Lib. III, Tit. 46.

[21] See Webster's *Biographical Dictionary*, Springfield, 1943.

[22] *Cronica* Fratris Salimbene de Adam Ordinis Minorum (*Monumenta Germaniae Historica*; Scriptores), Hannoverae, 1905-13, p. 613: " Anno domini millesimo CCLXXXVI . . . [discussion of bad winter and sitkness and men and chickens]. Et quidam medicus phisicus fecit aliquas aperiri et invenit apostema super cor gallinarum. Erat enim in puncta cordis cuiuslibet galline vesicula quidem. Fecit similiter aperiri mortuum hominem quendam et super cor hominis idem invenit."

[23] Michele Medici. *Compendio Storico della Scuola Anatomica di Bologna*, Bologna, 1857, p. 39.

the accused were brought. Medici says that they were caught in the act by the "curia," [24] but this is not evident in the document. It was charged that four medical students had broken into a cemetery and disinterred the body of a criminal who had been hanged the day before. The first witness testified that he had seen the corpse buried and later the empty grave. The second witness testified to seeing the corpse taken to be buried, though not actually buried, and to being asked by a certain doctor to help in digging up the corpse, which he and three associates had refused to do. A servant of the doctor, whose pupils the accused were, testified to seeing the corpse dissected and to overhearing that the students had dug up the man who had been hanged. The jailer identified the corpse as that of his former prisoner. And finally, a second witness identified the body as that of the man whom he had seen shortly before he was hanged. Two weeks later the students appeared and pleaded "not guilty." [24]

It would seem that, if the dissection of the corpse were a crime, we should get some expression of it in the record, but the main emphasis seems to be on the charge of cemetery breaking—which definitely constitutes a sacrilege under the head that stealing anything from a church is sacrilege.[25] There is, of course, the question why grave robbing was necessary, but anatomical material for private use was probably extremely hard to obtain. It is evident that the technique of demonstrating the anatomy was already formalized. Was the gravity of the charge merely based on the violation of the sacred ground or was the mutilation of the body also an offense? The record does not say. It was usual for even the universities later to show by their statutes that they had the permission of the civil authorities to dissect. It would seem, therefore, that whether unlicensed dissection offended the ecclesiastical authorities or not, it would certainly offend those of the city.

How scarce material was for anatomies even later may be seen from a statute of the University of Bologna for 1405. It says that without the Rector's license no one is to presume to acquire a body for anatomical purposes.[26] Even in 1442, when the statutes were revised, the material

[24] See M. Medici. *Compendio Storico della Scuola Anatomica di Bologna*, Bologna, 1857, the appendix. The case is taken from a manuscript in the public archives of Bologna. It was transcribed by Ottavio Mazzoni Toselli, the archivist. For the Latin see the Appendix to this paper.

[25] See *Catholic Encyclopedia, op. cit.*, article on "sacrilege" for modern definition of sacrilege.

[26] "Quoniam ad industriam et utilitatem scolarium spectat et pertinet facere anothomiam, et plerumque consueverunt rixe et rumores in reperiendis seu querendis corporibus,

was apparently not very abundant. The Podestà was to furnish one male and one female body a year, or if no female body was available, a second male body. The bodies must be those of persons born far from Bologna—no doubt to spare everyone's feelings.[27]

A good illustration of the usual origin of bodies used for such purposes can be seen in the way Mondino begins his description how to perform an anatomy: "Having placed the body of one that hath died from beheading or hanging in the supine position, we must gain an idea of the whole."[28] The royal permission of John of Aragon to the University of Lerida in 1391 is interesting in allowing the anatomists to have death by drowning or suffocation substituted for that to which the criminal whose body they were to dissect would otherwise have been subjected.[29] It is to be noted that this permission was for an anatomy once in every three years. It does not appear that anatomy was being very greatly encouraged even if it was not being prevented.

From about 1410, we have Pietro d'Argellata's own account of embalming Pope Alexander V.[30] He describes opening the body as for an anatomy and removing the internal organs. If the opening of the human body was really forbidden by the Church, it could not have been done, surely, to the body of the pope. Of course there was no alteration in the appearance of the body, such as there would have been had the body been actually dissected. It could be argued, perhaps, that to destroy the appear-

ex quibus seu de quibus anothomia fieri debeat, statuerunt et ordinaverunt quod aliquis doctor aut scolaris aut quivis alius non audeat vel presumat sibi acquirere aliquid corpus mortuum pro dicta anathomia fienda nisi primo licentia prehabita a domino Rectore, qui pro tempore fuerit." Rubric 96, p. 289, "de Anothomia," in *Statuti delle Università dello Studio Bolognese*, pub. by Carlo Malagola, Bologna, MDCCCLXXXVIII.

[27] "Item in Statuto posito sub Rubrica de Anothomia fienda, statuerunt debere adiungi, quod quilibet Potestas civitatis Bononie vel alter eius Locumtenens seu conservator Justitie, ad requisitionem Rectoris et Conciliariorum teneatur dare singulis annis duo subiecta pro Anothomia, unum maschulum et unam feminam, si sibi occurrerint, et si non occurreret femella, teneatur dare duos maschulos quomodocumque fieri poterit, et quod dicta subiecta sint oriunda a loco distante a civitate Bononie per treginta miliaria." *Ibid.*, p. 318.

[28] From the *Fasciculo di Medicina*, Venice, 1493, as edited by Charles Singer, Part I, translation of the *Anatomy* of Mondino da Luzzi, Florence, 1925, p. 59. "Situato itaque corpore vel homine mortuo per decollationem vel suspensionem supino. Primo noticiam debemus habere." From the edition of Mondino by Berengario da Carpi, *op. cit.*, 7 vols.

[29] "Sic quod quacunque maneria seu specie mortis quam eius demeritorum occasione subire debeat minime obsistente, palam coram omnibus qui eum videre sic obire voluerint, per officiales nostros predictos in aqua iudicialiter demergatur, et inibi penitus suffocetur." Quoted by Moritz Roth in *Andreas Vesalius Bruxellensis*, Berlin, 1892, p. 13, from *Gazette des Hôpitaux*, 1881, N. 54, p. 430.

[30] See Appendix.

ance of the body would be contrary to the spirit of "de Sepulturis." but I am inclined to think that the bull was merely, as it states, aimed at a specific practice.

In 1482 there was a papal permission to the University of Tübingen to dissect. Both Robert von Toeply and del Gaizo refer to this document.[31] Unfortunately neither quotes the document nor refers to a readily available source. In connection with it del Gaizo says: "La facoltà di Tubinga domandava di potere notomizzare i cadaveri dei malfattori morti giustiziati, Sisto IV concedava sollecitamente questo diritto a quello scuola, la quale avevalo chiesto, perche i magistrati di quei luoghi reputavano non darlo 'absque sedis apostolicae dispensatione seu licentis.'"[32] Del Gaizo may mean that there was some popular feeling against anatomy. Perhaps it is unwise and unsound to argue backwards, but to this day there is a horror in many people's minds of being anatomized after death. There seems to be evidence that this attitude existed in the Middle Ages when the Faculty of Paris buried a cadaver at night "ad evitandum rumorem populi."[33]

It seems hard, therefore, to find proof in the evidence from Italy (and the above permission certainly originated in Italy) for the statement that the Church opposed dissection. The permission to the University of Tübingen, in fact, rather tends to disprove it. Yet in France we have the statement that it is definitely forbidden.

The earliest evidence to the contrary was a statute of the University of Montpellier for 1340, before Montpellier was yet a part of France. providing for an anatomy biennially.[34] In 1340 Montpellier was still a part of the kingdom of Aragon and Majorca.[35] It is interesting to note that this is even earlier than the permission to Lerida under the same crown.

After Montpellier became French, a decree of the duke of Anjou provided for a cadaver per year.[36] Of course these statutes merely supply

[31] See del Gaizo as above. Von Toeply in Puschman's *Handbuch*, Jena, 1903, Vol. 2. It is probably included in Roth's *Urkunden zur Geschichte der Universität Tübingen aus den Jahren 1476 bis 1550*, Tübingen, 1877.

[32] Article referred to above, p. 296. [33] See below.

[34] "XIII De Anathomia. Quia experiencia optima rerum magistra dicitur, statuimus quod, de biennio in biennium et logius, cancellarius, una cum magistro non legente, sacramento sint astricti, ut provideant quod fiat anathomia corporalis." From Gurlt, Vol. II, p. 15, quoted from Marcel Fournier, *Les Statuts et privilèges des universités françaises depuis leur fondation jusqu'en 1789*. T. II, Paris, 1891, fol. p. 66.

[35] See Nicaise, *op. cit.*, p. xlix.

[36] See Wickersheimer, *Les premières Dissections de la Faculté de Médecine de Paris*, Paris, 1910.

evidence that anatomy was not hindered there. Both Walsh and Nicaise have tried to connect this tolerance with the residence of the popes at Avignon.[37] Nicaise says: "La tolerance que l'Université de Montpellier montrait envers les chirurgiens libres ne dura pas; quand les papes eurent quitté Avignon, elle interdit à ses membres la practique de la chirurgie." This does not mean that anatomies were not performed by anyone, but that the manual surgery was not performed by the doctors of medicine, who thought it beneath their dignity.[38] But neither of the permissions in question is after all papal. It is easy, however, to infer that there was tolerance if not encouragement. Guy de Chauliac was both scholar and papal chaplain.[39]

On the other hand, at Paris around 1340 Guido de Vigevano was writing that the church forbids anatomy. The first dissection there was in 1407. It was the autopsy of the bishop of Arras. It was a regular medical postmortem performed in the hope of determining the cause of disease for the benefit of the living. Dinus de Rapundis, a councillor of the duke of Burgundy, was suffering from a disease similar to that from which the bishop had died. The most interesting thing about this autopsy is that the word "anatomy" is used, the very word used of a school dissection. This tends to emphasize how closely these two were connected at that time.[40]

The first dissection in the *Commentaires de la Faculté de Médecine de Paris* is in 1477-78. A sum is there paid out for bringing a hanged man to the place where the dissection was performed.[41] From then on, irregular notices of anatomies appear in 1481-82, 1483-84, 1485-86, 1489-90, 1491-92, 1492-93, 1493-94, 1494-95, 1495-96, and 1498-99, with no anatomy recorded for 1499-1500.[42] They were marked sometimes merely by items in the year's expenses, sometimes, as in 1491 when the barbers got hold of a cadaver, they were matters for discussion.[43] The faculty was none too pleased to find the barbers getting anatomical material without the aid of university patronage. The ease of obtaining material by this time is to be noted. On the other hand, in 1498-99 the barbers were tactfully asking for a doctor to demonstrate the anatomy of the cadaver they

[37] See Walsh, James, *The Popes and Science*, N. Y., 1911, p. 79.

[38] Nicaise, *op. cit.*, p. liii.

[39] Nicaise, p. 15, quotes Guy as saying "et moy Guy de Chauliac Chirurgien et Maistre en Médecine, . . . et Chaplain commensal de nostre Seigneur le Pape."

[40] Wickersheimer, *Les Premières Dissections*, p. 6.

[41] *Commentaires*, p. 286.

[42] *Commentaires*, pp. 296-444.

[43] *Ibid.*, p. 331.

had been promised by the magistrates. The faculty replied they were willing for the barbers to attend one of their dissections. Material was probably not so abundant that the faculty wanted the first cadaver to go to the barbers, aside from the setting of a bad precedent. That same year the barbers frankly complained that there hadn't yet been any anatomy.[44] The faculty replied that they would arrange to obtain a corpse and have one. By this time the doctors had managed to get the barbers into the position of clients.

Most interesting, however, of all the entries about anatomies is the itemized account of one in 1491. There are first the expenses of obtaining the corpse and performing the anatomy. Then there are the expenses of burying the corpse in consecrated ground and having mass said for the repose of the dead. Now if the bull " de Sepulturis " were taken to apply to bodies used for anatomical purposes, this could not have been done. Either it had never been so interpreted or had ceased to be by this time. Also, as has been noted before, the body had to be buried " nocte facta ad evitandem rumorem populi." [45]

It is tantalizing to wonder whether earlier anatomies may not lie concealed in lump expense accounts. Wickersheimer thinks that very likely there were earlier public dissections and that the mutual jealousy of doctors and surgeons kept the doctors from recording their earlier dissections.[46] This would be especially true if corpses were hard to get earlier. But certainly if the faculty had enough experience to perform the autopsy on the bishop of Arras in 1407, we must suppose that it started earlier. We do not know when the doctors of Paris passed from the stage Guido de Vigevano mentions, where the Church prohibited dissections, to this freedom. Sometime between 1350 and 1400 is as near as we can put it.

So far in this discussion I have supposed that church rules would have been rigidly enforced. Such does not seem to be the case. Actually, rules were very adaptable. One rule was " Nullam chirurgiae artem subdiaconus, diaconus, vel Sacerdos exerceat quae inchisionem involverit." [47] Del Gaizo quotes a long list of surgeons who were clerics.[48] Theodoric, bishop of Cervia, was a surgeon. Guy de Chauliac is listed as " sacerdos, ora cappellano, ora archiatro di tre pontifici." I think it is therefore safe to say that Church rules were after all adaptable and subject, no doubt, to local modification.

[44] *Ibid.*, p. 409.
[45] See Appendix.
[46] Wickersheimer, *Les Premières Dissections*, p. 13.
[47] *Decretales D. Gregori P. IX*, Venetiis, 1604, pp. 1577-90.
[48] Del Gaizo, *op. cit.*, p. 291.

In summary, we have evidence that in Italy dissection began earlier than 1240, at Montpellier by 1340 at the latest, and in France proper probably prior to 1400, certainly by 1407. We have no testimony that anatomy was hindered in Italy at any time, unless the prohibition against boiling be taken as a hindrance. But Guy de Chauliac, a papal chaplain, did not interpret it that way. At Paris a prohibition of anatomy is mentioned, but by 1407 a postmortem is being performed on a prominent ecclesiastic. On the other hand, there is no evidence that dissections were allowed to be carried on wholesale. Permissions were for one or two a year. It could perhaps be argued that authorities, ecclesiastical and lay, were very conservative on that subject. But it would be too partisan to argue that there was therefore a deliberate policy of discouragement, as it would be too partisan to argue that there was a policy of aiding anatomical science. In France and Italy the autopsy seems to have smoothed the way for the teaching of anatomy. Certainly by 1500 in both countries the dissection of the human body was established.

APPENDIX

I. *Bull of Boniface VIII*

De Sepulturis.

Corpora defunctorum exenterantes, et ea immaniter decoquentes, ut ossa a carnibus separata ferant sepelienda in terram suam, ipso facto sunt excommunicati.

Detestandae feritatis abusum, quem ex quodam more horribili nonnulli fideles improvide prosequuntur nos piae intentionis, ducti proposito, ne abusus praedicti saevitia ulterius corpora humana dilaceret mentesque fidelium horrore commoveat, et perturbet auditum, digne decrevimus abolendum. Praefati namque fideles hujus suae improbandae utique consuetudinis vitio intendentes, si quisquam ex eis genere nobilis, vel dignitatis titulo insignitus praesertim extra suarum partium limites debitum naturae persolvat, in suis vel alienis remotis partibus sepultura electa, defuncti corpus ex quodam impiae pietatis affectu truculenter exenterant ac illud membratim, vel in frustra immaniter concidentes, ea subsequenter aquis immersa exponunt ignibus decoquenda. Et tandem, ab ossibus tegumento carnis excusso, eadem ad partes praedictas mittunt, seu deferunt tumulanda. Quod non solum divinae Majestatis conspectui abominabile plurimum redditur, sed etiam humanae considerationis obtutibus occurrit vehementius abhorrendum. Volentes igitur, prout officii nostri debitum exigit, illud in hac parte remedium adhibere, per quod tantae abominationis, tantaeque immanitatis et impietatis abusus penitus deleatur, nec extendatur ad alios: Apost. auctoritate statuimus et ordinamus, ut cum qui cuiuscunque status aut generis, seu dignitatis extiterit: in civitatibus, terris, seu locis, in quibus Catholicae fidei cultus viget, diem de cetero claudet extremum: circa corpora defunctorum huiusmodi abusus, vel similis nullatenus observetur, nec fidelium manus tanta immanitate foedentur. Sed ut defunctorum corpora sic impie, ac crudeliter

non tractentur, deferantur ad loca, in quibus viventes elegerint sepeliri, aut in civitate, castro, vel loco, ubi decesserint vel loco vicino Ecclesiasticae sepulturae tradantur ad tempus, ita, quod demum incineratis corporibus, aut alias, ad loca, ubi sepulturam, elegerint deportentur et sepeliantur in eis. Nos enim si praedicti defuncti executor vel executores, aut familiares ejus, seu quivis alii cuiuscunque ordinis, conditionis, status, aut gradus fuerint, etiam si Pontificali dignitate praefulgeant, aliquid contra huiusmodi nostri statuti et ordinationis tenorem praesumpserint attentare, defunctorum corpora sic inhumaniter et crudeliter pertractando, vel iaciendo pertractari, excommunicationis sententiam (quam exnunc in ipsos proferimus) ipso facto se noverint incursuros, a qua non, nisi per Apostolicam Sedem, praeterquam in mortis articulo possint absolutionis beneficium obtinere. Et nihilominus ille, cuius corpus sic inhumane tractatum fuerit, Ecclesiastica careat sepultura. Nulli ergo, et cetera. Datum Lateran. XII Calend. Martii, Pont. nostri anno VI.[1]

II. *Case of Body Snatching*

Die XX Novembris

Inquisitio, quae fit[2] contra

Magistrum Paxinum
Magistrum Laurentium
Magistrum Albertinum } de Mediolano

Magistrum Jacobum de Placentia

Omnes forenses in eo quod ipsi una cum pluribus aliis de anno praesenti mense praesenti noctis tempore accesserunt ad Ecclesiam S. Bernabe, et entraverunt in Cimiterio, et Sacrato ipsius Ecclesiae, et de Sacrato, et sepulcro noctis silentio dictum Cimiterium, et sepulcrum in Sacrato positum violaverunt, et devastarunt, et de dicto Cimiterio, et sepulcro extraxerunt, ex exportaverunt quoddam corpus cuiusdam Pixe, quod corpus fuit sepultum, et positum in dicto sepulcro die lune decimonono mensis praesentis Novembris. Et ita talia faciendo commiserunt sacrilegium, et violaverunt sepulcrum in loco sacrato positum. Et praedicta commisa fuerunt noctis tempore in Cimiterio dictae Ecclesiae positae in strata Burgi S. Felicis extra Circlam qua itur ad pontem Reni.

Die 21 Novembris

Inchoata fuit dicta inquisitio post nonam, et ante vesperas in loco commissi maleficii in domibus Ecclesiae S. Bernabe, quae domus sunt juxta stratam publicam qua itur versus pontem Reni extra burgum S. Felicis praesentibus N. N. etc. ad quem locum ego Joannes Notarius una cum dicto judice, et librum Inquisitionis mecum portavi.

Testes

Petrus Ser Amadori dixit se tantum scire quod die lune prox. praet. 19 praesentis Novembris vidit portari Paxium, qui fuit suspensus dicta die ad furcas positas ad

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[1] *Corpus Juris Canonici.* Petro et Francisco Pithoeo, Paris, 1777. Extravagantes. Lib. III, tit. vi, p. 408.

[2] The usual formula is omitted.

pontem Reni per sententiam latam per dictum Potestatem ad foveam in Cimiterio, et Ecclesiam S. Bernabe positum juxta fornaces, et ipsum in ipso Cimiterio sepulcri existentem, ibi praesente domino domino Bartolommeo praesbitero dictae Ecclesiae. Et postea die martis prox. sequentis vidit sepulturam violatam, et devastatam, et dictum Paxium, et ejus corpus mortuum non esse in dicta sepultura, et fovea. Interrogatus qui fuerunt violantes dictam sepulturam et exportantes dictum corpus respondit se nescire.

Petruccius Sandri juratus testis etc. dixit, quod vidit dictum Paxium portari in quadam bara a ponte Reni usque ad Ecclesiam S. Bernabe ad sepeliendum, non tamen vidit eum sepeliri. Interrogatus quid scit de violatione, et fractione dictae sepulturae, et de exportatione dicti corporis, respondit nihil scire, nisi tantum quod quidam medicus de Boateris, qui moratur in domibus illorum de Boccadecane rogavit Nardum, Mazzolum, Rubeum, et ipsum Petruccium nuntios quod irent ad descavandum, et exportandum corpus dicti Paxii sepulti in Cimiterio dictae Ecclesiae, et ad frangendum, et devastandum dictam sepolturam, qui responderunt quod nolebant ire.

Dicta die post vesperas inchoata fuit dicta inquisitio in Cappella S. Salvatoris sub porticu domus scolarum in quibus legit Magister Albertus Bon. positae in dicta Cappella juxta Jacobum Guidonis specialis, et juxta viam publicam etc. in loco commissi maleficii, et corporis dicti Paxi exportati, per D. Judicem, ad quem locum ego Joannes Notarius una cum dicto Judice accessi, et librum inquisitionis mecum portavi, et dictam inquisitionem inchoavi ad dicta infrascriptorum testium.

Carolinus, quondam Bonetti de Pergamo, famulus Magistri Alberti Bon. testis juratus de veritate dicenda dixit se tantum scire quod die 20 mensis Novembris praesentis vidit quemdam hominem mortuum in domo scolarum in quibus legit Magister Albertus Bon. posita in Cappella S. Salvatoris juxta Albertum hospitem, et juxta Jacobum Guidonis specialis et vidit dictum Magistrum Albertum, Magistrum Pasinum, Magistrum Albertini, Magistrum Laurentium, omnes de Mediolano scolares Bononiae in Medicinale, et Magistrum Jacobum de Placentia, et alios quamplurimos cum rasuris, et cultellis, et aliis artificiis, et sparantes dictum hominem mortuum, et alia facientes, quae spectat ad artem Medicorum. Interrogatus quis erat ille homo mortuus quem vidit, respondit quod non cognovit, sed tamen audivit dici a domina Beatrixia matre dicti Magistri Alberti Bononiensis, quod quidam scolares Magistri Alberti fecerunt desepeliri quemdam, qui fuit suspensus die 19 Novembris, de Cimiterio, et sepultura, in qua, et quo sepultus erat causa faciendo Notomiam, et ad hoc ut Magister Albertus praedictus doceret eos videre ea, quae videnda sunt in corpore hominum. Interrogatus qui fuerunt desepelientes respondit se nescire.

Nicolaus Petri dixit se tantum scire, quod de praesenti mense 21 Nov. vidit in domo scolarum in quibus legit Magister Albertus Bon. quemdam hominem mortuum et sparatum, quod corpus est totum incisum. Interrogatus si eum cognovit, respondit quod fuit Paxius, qui fuit suspensus per gulam die lune 19 Novembris. Interrogatus quomodo cognoscit, respondit, quia eum custodovit in carceribus Commune et eum vidit dicta die lune in carceribus praedictis de mane vivum.

Petruccius Sandri Cappellae S. Andrea de Ansaldis testis dixit quod die 21 Novembris vidit in domo scolarum, in quibus legit Magister Albertus Bon. quem-

dam hominem mortuum, et sparatum, quem cognovit, quia vidit eum dicta die lune in mane vivum ad arrengheriam,[3] et mortuum ad furcas suspensus.

Die 6 Decembris

Comparuerunt dicti Inquisitie, et excusaverunt se a dicta inquisitione lectam sibi, et negaverunt omnia.[4]

III. *Embalming of Alexander V.*

Ego tamen narrabo tibi modum de isto quem tenui in summo Pontifice Papa Alexandro qui in Bononia morabatur. Ego praecepi ministris primo ut scinderent ventrem a pomo granato usque ad os pectinis, respiciendo tamen ne intestina rumpantur. Facto hoc, ego inveni intestinum rectum, et ligavi ipsum in duobus locis, et consequenter in medio incidi. Consequenter excarnavi omnia intestina usque ad duodenum, et iterum incidi prope factam ligaturam, ut dictum est de recto, et sic habui intestina munda, et sine foetore. Demum extraxi ipsum hepar capiendo ligamentum ejus, deinde splenem, et consequenter renes, et omnia in una capsa fuerunt posita. Deinde transivi ad spiritualia, et removi pulmonem et cor consequenter cum omnibus ligamentis suis: deinde ligavi meri, et movi stomachum. Hoc toto peracto, aliqui voluerunt extrahere linguam, et non sciverunt. Ego incidi ipsam sub mento, et extraxi sibi linguam per locum illum cum trachea arteria et meri: demum movi in arteriam adorti, et venam chilis: demum movi illud residuum intestini, quod remansit ligatum usque ad substantium ani inclusive. Hoc completo, succurrimus eum cum spongiis: demum posuimus in ventre suo multam aquam vitis et tota substantia intrinseca ex illa aqua fuit lota, et similiter pars gulae incisa. Hoc facto, removi aquam vitis cum spongia, et iterum aliam posuimus, et eodem modo fuit remota. Consequenter, hoc facto, venter fuit plenus istis pulveribus. R. Mirrham, Aloe, Acaciam, Nucem cupressi, Galliam muscatam, vel Nucem muscatam, Sandolos, Lignum Aloe, Ciminum, Alumen, Sanguinem Draconis, Bolum Armenum, et Terram sigillatam. Consequenter postquam totus venter fuit istis pulveribus coopertus, posui de bombyce, et consequenter super bombycem ponebam pulveres, et sic per istum modum totus venter fuit plenus. Demum ministri suerunt ventrem cum acu sicut pelipary suunt pelicias, et sic gula pulveribus plena fuit suta. Demum habuimus balsamum colliquefactum cum albumine ovi, et bombyx fuit intincta et in ano fuit posita. Et sic illa bombyx fuit intincta et balneata in isto balsamo, et in ore fuit posita, et sic fecimus in naso, et in ambabus auribus. Consequenter habuimus sparadrapum[5] factum ex cera, et parum terebentinae, et totum corpus fuit in illo sparadrapo involutum, et ligatum: et sic tibiae et crura fuerunt involuta, et similiter brachia in isto sparadrapo de per se tamen a corpore. Demum fuit indutus ut summus Pontifex, et stetit per dies octo sine aliquo foetore mundi. Intestina et alia membra incontinenter fuerunt sepulta: et

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[3] From the Italian "ringhiera," i. e., where the sentence was read to the condemned.

[4] Michele Medici. *Compendio Storico della Scuola Anatomica di Bologna*, Bologna, 1857, p. 427, transcribed from a manuscript in the public archives of Bologna.

[5] "Sparadrappo"—Italian, cerecloth.

iste modus est securior omnibus aliis. Facies autem potest liniri et lavari omni die cum aqua rosarum valde salita: haec autem prohibent putrefactionem.[6]

IV. *From the Commentaires de la Faculté de Médecine de l'Université de Paris.*

1491

Die jovis 17a novembris . . .

Preterea aperui quod michi relatum fuerat per cirurgicos Parisienses quod barbitonsores obtinuerant a domino locumtenenti criminali quoddam corpus executum per justiciam pro anathomia pro ipsis Parisius fienda contra privilegia et consuetudines ipsius facultatis. Deliberatum est quod, juxta consilium consiliariorum nostrorum et etiam dominorum deputatorum facultatis, procederetur viriliter in hac materia cum cirurgicis Parisiensibus; quod si opus esset in istis duobus punctis rogaremus dominum cancellarium Parisiensem ut nobis esset auxilio, consilio et favori; et non placebat ut aliquis magistrorum facultatis se intromitteret de hujusmodi anathomia declaranda, ipsa facultate inconsulta.[7]

From 1493–94

Die 11a mensis januarii, . . . item placuit facultati quod possent interesse anathomiis fiendis, et ubi voluerint habere corpus anathomisandum, dummodo venerint ad facultatem, requirendo ipsam quatinus vellet eis deputare unum vel duos de magistris ad requirendum dictum corpus nomine facultatis pro hujusmodi anathomia fienda, in qua poterunt vocari cyrurgici, ne videantur sperni; item non denegat facultas practicare cum eis in causis per eos allegatis, videlicet in furunculis, bochiis et aliis apostematibus, secundum quod cavent sua privilegia; verum ubi eminet periculum mortis, et in casibus reservatis cirurgicis, non vult facultas derogare juri dictorum cirurgicorum.[8]

1498–99

Die 24a novembris sabbati, post missam, fuit facultas congregata super refusionibus, ubi famuli tonsorum porrexerunt supplicationem, qua petebant per facultatem deputari magistrum, qui eis legeret anathomiam corporis eis promissi per locumtenentem criminalem.

Die 13a decembris, fuit congregata facultas . . . ubi porrecta fuit supplicatio tonsorum, qua petebant an facultas se opposuerat, adherendo cyrurgicis, ne fieret per tonsores anathomia corporis per judicem criminalem eis tunc exhibiti. Respondit facultas quod persistebat in sua oppositione, et quod non permitteret illam fieri per eosdem tonsores anathomiam, imo prima futura anathomia fieret per facultatem,

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[6] From *Compendio Storico della Scuola Anatomica di Bologna da Michele Medici*, Bologna, 1857, p. 40, quoted from *Chirurgia* Magistri Petri de Largelata, Venetis, mandato et expensis nobilis viri D. Octaviani Scoti Civis Modoctiensis. Octavo Kal. Mart. 1497 per Bonetum Locatellum Bergomensem. Lib. V Tratt., XII Cap. "De Custodia corporis mortui." (Alex. V. d. 1410.)

[7] *Commentaires de la Faculté de Médecine*, Wickersheimer, editor, Paris, 1915, p. 331.

[8] *Ibid.*, p. 353.

cui si vellent, et tonsores et cyrurgici adessent, solutis solvendis, quod si tonsores alias vel plures optarent anathomias, requirerent illas a facultate cujus interest admittere anathomiam et non tonsorum, quo facto, facultas deputaret aliquos magistros lecturos in prefatis anathomiis verbis latinis cum gallicis mixtis, ita ut quilibet assistentium intelligere posset, sumptibus tamen tonsorum, ut posthac mitteretur pax cum cyrurgicis et tonsoribus, cum quibus facultas pie et mite agere parata est et vivere.

Die sabbati 13a aprilis, post missam facultatis in Mathurinis, fuit congregata facultas super querimonio barbitonsorum de anathomia nondum facta. Super quo deliberavit facultas, quod unus baccalariorum, nomine facultatis, peteret primum corpus, presente aliquo cyrurgicorum, quorum si nullus adesse voluerit, habeat prefatus baccalarius unum ex barbitonsoribus magistris ad petendum et obtinendum aliquod corpus, et de illo fieret anathomia. . . .[9]

1492–93

Die 1a aprilis facta est anathomia in scolis facultatis, pro qua primo tradidi pro executore, qui deposuit corpus transportarique fecit ad dictas scolas. . . . 28 s. p.

Item pro suis servitoribus . . . 2 s. p.

Item pro duabus situlis dicte anathomie necessariis, simul et pro scupis servientibus in hoc negotio, in somma . . 4s. 8d. p. 2 t.

Item remigero seu conductori navis, qua delatum est corpus a Celestinantibus ad dictas scolas medio Scecane . . . 16 d. p.

Item pro jamtaculo, ubi erant doctor anatomisans, cirurgici, bidelli et baccallarius ad hoc commissus . . . 8 s. p.

Item pro prandio predictorum juxta scolas facto, ut diligentius rem ipsam expedirent . . . 6 s. p.

Item pro duobus hominibus qui dimiserunt capud a corpore pro fovea, ad eam inhumandum per eos nocte facta, ad evitandum rumorem populi, et pro deportatione hujusmodi corporis ad cimiterium Beati Severini . . . 8 s. p.

Item pro sacerdote qui corpus inhumavit et pro missa per eum celebrata pro anima defuncti . . . 4 s. p.

Item pro jentaculo dictorum doctorum et cirurgicorum secunda die . . . 2 s. 8 d. p.

Item pro illo qui mundavit scolas, mensam et curiam et qui etiam detulit acquam . . . 4 s. p.

Item candelis de cera pro sepeliendo corpus . . . 2 d. p.

Item aceto pro lavando corpus . . . 18 d. p.

Item pro linteamine ad sepeliendum et stramine ad coperiendum . . . 3 t.

Item pro mensa et tripodibus emptis pro hujusmodi negotio . . . 20 s. p.[10]

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[9] *Ibid.,* pp. 403-409.

[10] *Ibid.,* p. 349.

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Warfare of Eleventh Century.

The final stage of the battle of Hastings depicting the death of Harold and the flight of the English. Here we may see illustrated the various weapons used by the Normans, the wounds of which were of special interest to the Military Surgeon such as Jamerius. From the Bayeux Tapestry-Embroidery of Queen Matilda (xi century) recounting the conquest of England by William the Conqueror.

MASTER JOHANNES JAMATI (JAMERIUS JAMASCICUS) A FORGOTTEN MILITARY SURGEON

R. C. HOLCOMB

Sometime late in the 12th or early in the 13th century there flourished in Southern Italy a military surgeon who wrote one of the first works on wounds due to weapons used in warfare at this time. His surgery, often referred to by the early surgeons, went into an eclipse after the 15th century and we hear little of him until Julius Pagel discovered and published in 1909 a manuscript of the surgery which had come to light in a Munich library. The work was unknown to Daremberg who confused Jamascicus with Damascenus in his comment on the work of the Four Masters, and the work was also unknown to De Renzi, the editor of *Collectio Salernitana*, who failed to include Jamerius' work in this collection, and, from the comments of Guy de Chauliac, he considered the work might have been one on veterinary medicine.[1]

The work, however, is not a work on veterinary medicine, and the unfortunate word "*brutalis*" with which Guy described the work is more apt to have reference to brutal warfare than to brute creatures.

Some writers who have mentioned Jamerius have followed Guy by placing him after the Four Masters, and have considered that the work was drawn largely from the work of Roger, both of which notions are erroneous. Guy's reference to him is in the Prologue of his great surgery, wherein, after stating that up to the time of Avicenna, surgery and medicine had been considered together, he goes on to say: "But after him, either by reason of fastidiousness, or by reason of the tediousness of the occupation, surgery had been separated and abandoned into the hands of mechanics, among whom the earliest were Roger and Rolando and the Four Masters, who composed special books on surgery, and mixed in their works considerable empiricism. Thereafter we find Jamerius, who composed a certain brutal surgery, in which was intermixed considerable foolishness, much of which was derived from Roger. Subsequently we encounter Bruno," etc.

It is plain that Guy places Jamerius among those who were in the van of the renaissance of surgery, his work being intermixed with Roger's

[1] De Renzi, Collect. Salernit. I, 247, "Ne vale dopo di essi far menzione di Jamerio, uomo sconosciuto, e forse anch' egli italiano, poichè Guido dice che mischio all' opera molto di chirurgia veterinaria" etc.

"foolishness." Laurent Joubert, who translated the Grand Surgery into French, about 1578, noted 36 references therein to Jamerius. Pagel cites 37, many of them referring to wounds, ulcers, fractures, dislocations, as well as diseased conditions.

The manuscript from which Pagel printed the first edition, 1909, consisted of 82 folios, each face consisting of two columns of text. Book IX of the surgery, the *Antidotarium*, had previously been published by P. Pansier in *Janus* in 1903. There are copies of this *Antidotarium* at Oxford and Paris.

In its plan the work does not resemble any of the early surgeries such as the work attributed to Roger, the Bamberg Surgeries, Rolando or the Four Masters. The first three books are devoted almost entirely to injuries from strife and by weapons. The work comprises nine books and a total of 198 chapters. The books in a general character are thus put together:

Liber I., xv Chapters: Deals with wounds, contusions and fractures of the skull.

Liber II., xi Chapters: Deals with wounds from weapons in various parts of the body.

Liber III., xvii Chapters: Deals with wounds of other parts of the body than the head. This Book is of particular interest, as it deals with wounds of the neck, arms, between the ribs, the region of the heart, of the lungs and diaphragm. Wounds of the stomach, intestines and bladder, wounds of abdomen with arrow, dagger and similar weapons, including those with protrusion of intestines and wounds with injury to the intestines without protrusion.

Liber IV., xxiv Chapters: Wounds and diseases of eye, eyelids, and ear, diseases of nose, lips and oesophagus.

Liber V., xx Chapters: Deals with apostemata or swellings, goitre, venereal disease, erysipelas, etc.

Liber VI., xxiii Chapters: Deals with dislocations and fractures.

Liber VII., xix Chapters: On ulcers and fistulae.

Liber VIII., xxviii Chapters: On miscellaneous subjects as skin diseases, injuries to nerves and vessels, epilepsy, hernia, hemorrhoids, dropsy, malum mortuum, tetanus and leprosy.

Liber IX., xxxxi Chapters: The Antidotarium.

The above arrangement would seem more orderly than the Bamberg Surgeries as described by Geo. W. Corner (On Early Salernitan Surgery, and Especially the "Bamberg Surgery," *Bulletin of the Institute of the History of Medicine*, Vol. v, No. 1, Jan. 1937). Corner, makes no reference to the work of Jamerius who was without question a surgeon

of South Italy, plainly a disciple of Constantine. Pagel has pointed out that Jamerius, unlike Rolando, the Four Masters, and subsequent surgeons makes no reference to Roger. Jamerius mentions Hippocrates twice, Constantine six times, the Salernitans once and himself once. Roger mentions Hippocrates twice but Constantine not at all.

Jamerius in Book V, Cap. iv makes reference to Hippocrates' work on the Prognostics and again in Book VIII, Cap. xxvii dealing with *de spasmo* (tetanus) he refers to the Aphorisms. These references to Hippocrates are probably from the translations of Constantine. In all he makes six references to Constantine and these are contained, 1 in book VII and 5 in book VIII. He makes no reference to any authority in his books I, II, III, IV, VI, and in book IX mentions himself in connection with its authorship. His specific references to Constantine are to be found in the chapter on fistula in ano (Book VII, Cap. xix). In Book VIII he again refers to Constantine in his chapter iii, *de scarificatione et locorum diversitatibus*. In his chapter ix, *de hydropisi*, he makes two references to Constantine's viaticum, and a third reference to *Constantini in sua cirurgia*. In the same book, Chapter xxi, *de morphea*, he makes reference to *Constantinus in pantegi*. This completes his six references to Constantine. In Chapter xxiii, *de verrucis et porris*, he thus refers to the Salernitan group *ad idem cum lacte ficum quas vulgas salernitanus* (sic) *lanceolas appellant*.

The foregoing completes Jamerius' reference to other authority than his own and it seems evident that all these references were to the Arabic literature made available by the translations of Constantine by 1087. The Surgery of Constantine, was probably a part of his ninth book of Haly Abbas *Practica* a full translation of which was made after the death of Constantine by one John (1114-1115), believed by Rose to be John Afflacius (*History of Magic & Experimental Science* by Lynn Thorndike, vol. 1, p. 748).

The twelfth century saw great military activity in Southern Italy and in Sicily out of which arose the Kingdom of the Two Sicilies. Norman knights keen for battle made a conquest of England, and another Norman group drawn south by the business of the crusades, overran these regions, conquering them with their weapons. The Norman weapons, and the Norman method of fighting is graphically depicted for us in the contemporaneous Bayeaux tapestry, a large part of which is taken up with the battle at Pervensy, known to the English as the battle of Hastings. It is with wounds incurred in battles such as here set forth that the first three books of the Surgery of Jamerius deals. It was planned to serve the

surgeon in such disorders of warfare in these times, that Jamerius set himself to his task.

There are other reasons to consider that he belonged in Southern Italy or Sicily which is revealed by his use of the Arabic numerals, which are evident in his prescriptions throughout the text and particularly in the *Antidotarium*. His chapter on leprosy is excellent, and shows a knowledge of the old Greek remedies as well as the Hindu remedies such as the myrobalans, and Chinese rhubarb, remedies introduced by the Arabs. The Greek medicine prepared from the serpent as described by Galen, and the ancient treatment by castration are included. His *unguentum album* was prepared with a small amount of mercury (see lib. IX, cap. xv). His chapter describes four varieties of the leprosy, one for each humor, and known as the *tiria* (serpentine), *allopitia* (vulpine), *leonine* and *ellefantia* the same varieties described for elephantiasis of the Greeks. As to causes he attributes it to corrupt male sperm, menstrual blood, corrupt air, the immoderate use of foods generating the melancholic humor, and contact infection through association with persons afflicted with leprosy. The early symptoms are described as various maculae and impetiginous eruptions which cleared up spontaneously going to the internal organs, after which one of the four types of confirmed leprosy just mentioned, makes its appearance. The chapter contains nothing which may not be found in the works of the Arabic writers known to Constantine. He shows no acquaintance with the works of the Western Caliphate as represented by the translations of Gerard of Cremona at Toledo (1170-1187) and which were known to Rolando, the Four Masters and Bruno.

Several years ago the writer scanned the surgeries of Roger, Jamerius, Rolando, the Four Masters, Bruno, Theodoric, Salicet, Lanfranc, Henry de Mondeville, Yperman, Guy de Chauliac, d'Argelata and Bertaphalia with a view to noting the authorities of each, and obtaining a cross-section of their sources. These authors made a total of 10,361 references distributed among 191 works and of these references 4078 were made directly to Galen or Avicenna, and of this total 2260 are credited to Avicenna, which will represent the preponderance of his influence upon medicine after Roger and Jamerius.

Rolando, the commentator on Roger, was the first to reveal the influence of the Arabian texts originating from the translating center at Toledo. He is the first of the aforementioned group to make reference to Avicenna and Galen. To these he adds Hippocrates, Alexander and the surgeons of the rising school of Bologna. He does not mention Jamerius.

The Four Masters refer to Roger, Jamerius, Rolando and among a total of 22 authors they refer to Avicenna, Abulcasis, Rhazes, Haly Abbas and Isaac, which would indicate an acquaintance with Arabic texts from both the Eastern and Western Caliphate.

The elegant Bruno was decidedly Arabic in his leanings, drew from Abulcasis, notices the Salernitans but does not mention Roger, Jamerius or Rolando by name. In his Prologue he states plainly enough a prevailing practice, on account of the unseemly or indecent employments of surgery, to relinquish much of it to the hands of the barbers. As the church abhorred the shedding of blood, surgery was a lay art not to be practiced by clerics. Warfare ignored this prohibition, and necessity was the mother of military surgery.

Pagel considers that Jamerius flourished in the 12th century. Sarton places his work ahead of Hugh de Lucca (whose teachings are largely known through Theodoric), and considers that he flourished in South Italy, and about the same time as Roland of Parma, probably 1230-32 (Sudhoff). As the date of the Peterhouse manuscript (Cambridge) of the Four Masters, bound with Constantine's *Viaticum*, as well as the manuscript of the Four Masters published by Daremberg, is 1230, it should be evident for reasons to be mentioned, that Jamerius must have written in South Italy some time before the work of the Four Masters was written in France. De Renzi places the date of the Four Masters in his chronology of Salerno, rather arbitrarily at 1270. Sarton considers the work was probably prepared in France *circa* 1260-70. Although the work of Jamerius is based to some extent upon the writings of Constantine, the same source as Roger, he has in his nine books contributed much from his own experience, and distinctly brings us closer to the surgeon himself than the unknown compilers of the Bamberg Surgery, or the text of Roger which would appear to be largely the notes of a disciple, Master Guido Aretino.

To show that Jamerius preceded the Four Masters, we will quote from the testimony of the Four Masters themselves. This text was first printed by Daremberg in 1854. The earliest references to them in texts that I have noted above, occurs in the works of Henry de Mondeville, Guy de Chauliac and d'Argelata. The Four Masters make a clear reference to Jamerius in their chapter on goiter (Cap. vi, *de cura botii gule*). Here they refer to and give in sufficient detail for identification, an ointment of Master Johannes Jamascicus. The scholarly Daremberg, who published this text doubtfully designates this reference to Damascenus. That this

is an error will be shown by quoting from the text of the Four Masters their chapter on *Botium* (goitre) and the chapter in the work of Jamerius on the same disease, *Bocio*, *Botio* (i. e. *bozium* of the Bamberg surgery). I give below for comparison a description of an ointment attributed by the Four Masters to Jamerius, and the text of Jamerius to which it refers.

From Daremberg's text of Quatuor Magistrorum super chirurgiam Rogerii et Rolandii

Cap. VI, De cura botii gule.

Magistri Johannes iamascicus (4. Peut-être faut-il lire Damasceni?) unguentum util ad botium: Recipe. radicis rafani ortolani, agrestis ana unc iij, pistentur et temperentur in iiij libris aceti fortissimi per iij des no(?) coquantur et pistentur: colanture quorum addantur libre iij mellis et iusquiami ad consumptionem decoquantur aceti et fiat unguento singulis diebus bis vel ter locus patiens confricetur vel fortiter inungatur et pulvis superior superaspergatur vel in unguento primo incorporetur: posset quoque apponi stercus porci masculi si masculus fuerit patiens, vel scrophe sive suis si femina fuerit patiens.

From Pagel's Chirurgia Jamati. (Incipit cyrurgia magistri Johannis jamati qui dicitur thesaurus secretorum.)

Liber Quintus Cap. LX, de botie. unguentum ad hoc util sic fit.

Rp. radicis raphani ortolani et agrestis ana unc. 3 temperetur in ℈ 3 aceti fortis per 3 dies exinde coquatur et colantur addantur in ℈ 3 mellis et usque ad consumptionem aceti fiat decoctio. hoc unguento fortiter bis singulis diebus locus patiens fricetur et super asperso pulvere lupinorum in modum emplastri superponatur stercus porci si masculus sit qui patitur vel scrophe si mulier.

If we can place the Bamberg Surgery at about 1150 A. D. and Roger 1170 A. D. (which is before the work of Avicenna was translated by Gerard), it would seem that Jamerius would belong in the period before Rolando the commentator, and at least represent the earliest surgeon whose text brings us in direct contact with the surgeon himself, which cannot be said of the mysterious Four Masters.

In those texts after the Four Masters no mention of Jamerius is noted in any work earlier than the Surgery of Guy de Chauliac, who notices him 37 times. Peter d'Argelata makes 24 references to him, some in each of the seven books of his surgery. The mention of his name by John Arderne, Brunschwig, and others, indicates his work was known at the School of Montpellier, the same school of writers who first brought our attention to the work of the Four Masters, and which school traces shadowy beginnings to a date as early as 1137 A. D.

Aside from the peculiar value of this work as an early work prepared for the military surgeon, Jamerius has shown himself a bold surgeon in other fields, experienced in wounds from such weapons as spears, daggers, arrows, axes, and swords; fractures; dislocations; ulcers; dermatology; venereal diseases; certain operative procedures on goitre, the head and the intestines. In fact the several chapters (chapters ix to xiv, Book III) on abdominal wounds and their signs, together with operative procedure in such cases, constitute distinct landmarks in the history of wound surgery.

The subject of abdominal surgery of the Middle Ages, the daring achievement of these military surgeons, is traced down to the end of the 15th century by Hieronymus Brunschwig in his *Buch der Chirurgia* (1491). Jamerius, Roger and Theodoric inserted into the gut a thinned canula of an elder stalk, over which they sewed the intestine, reasoning that the fecal matter would pass through it. Gilbert was not satisfied to leave the canula in place, and sewing around it did not draw together and tie all sutures until the canula was removed. The Four Masters cut the windpipe from a puppy or similar animal and used this as the canula over which they repaired the gut. William of Salicet recites the case history of one of his patients, a knight who had stabbed himself in the abdomen, and whose case had been abandoned by another. William operated, and saved him to become a father of children. Lanfranc and Guy opposed the canula as a foreign body, and after sewing up the wound in the intestine, they reinforced it with omentum. They all put atrocious powders into the wound, and some of the early surgeons to be sure of the gut getting into the right place after the repair, placed the patient on a plank which they tilted and shook until satisfied the intestines were in proper position.

EARLY CONCEPTS OF DENTAL CARIES IN AMERICA *

LOUIS LASZLO SCHWARTZ

A study of the early concepts of dental caries in America requires first a discussion of the role of theory in dentistry.

In the history of medicine there are numerous examples of the dual effect of theory. In the hands of an Ehrlich it has proven a most sensitive detector, locating rich veins of scientific fact of great practical utility. On the other hand, we have more often seen the effects of the dead weight of theory. Only a Vesalius could free anatomy from the unquestioning acceptance of Galen. It required a Lavoisier to liberate chemistry from the stultifying influence of the phlogiston theory of Stahl.

Theory in medicine has served both as an accelerator and brake upon progress. The latter effect was amusingly satirized by LeSage (1668-1747). His "Gil Blas" bemoans the disastrous results of his master's medical practices thus,

> But things will happen cross; they died to a man, either by our fault or their own. If their case was hopeless, we were not to blame; and if it was not hopeless, they were. Three visits to a patient was the length of our tether. About the second, we sometimes ran foul of the undertaker; or when we had been more fortunate than usual, the patient had got no further than the point of death. As I was but a young physician, not yet hardened to the trade of an assassin, I grieved over the melancholy issue of my own theory and practice. Sir, said I, one evening to Doctor Sangrado, I call heaven to witness on the spot that I have never strayed from your infallible method, and yet I have never saved a patient; one would think they died out of spite and were on the other side of the great medical question. This very day I came across two of them, going into the country to be buried. My good lad, replied he, my experience nearly comes to the same point. It is but seldom I have the pleasure of curing my kind and partial friends. If I had less confidence in my principles, I should think my prescriptions had set their faces against the work they were intended to perform. If you will take a hint, sir, replied I, we had better vary our system. Let us give, by way of experiment, chemical preparations to our patients; the worst they can do is to tread in the steps of our pure dilutions and our phlebotomizing evacuations. I would willingly give it a trial, rejoined he, if it were a matter of indifference, but I have published on the practice of bleeding and the use of drenches; would you have me cut the throat of my own fame as an author! Oh, you are in the right, resumed I; our enemies must not gain this triumph over us; they would say that you were out of

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conceit with your own systems, and would ruin your reputation for consistency. Perish the people, perish rather our nobility and clergy! But let us go on in the old path.[1]

The situation in dentistry during this time, was very similar. The worm theory, which held that teeth become rotten because of worms in the same way that an apple becomes rotten, had come down tenaciously through the centuries. The practical effect of the theory, was the practice of fumigation for the purpose of driving out the worms, which, although it was first described by Scribonius Largus, the physician to Claudius, was practiced by charlatans until nearly the end of the 19th century. The influence of this theory was not confined to the charlatans and to the people. It held sway for some time over dental thought. Although Fauchard, in 1728, effectively demolished the theory,[2] Jourdain, thirty-two years later, was still struggling with it but was not quite able to free himself. For example, Jourdain explained toothache by the movement of the mouth of the worm after it has penetrated the whole tooth and touched the sensitive fibres of the nerve.[3]

However, theory was not to dentistry what it was to medicine. In dentistry, unlike medicine, practice did not flow from theory. For example, a physician, George Sumner, of Hartford, wrote in 1819, " When I first came to this place one of the first questions asked, and it was the most common question was, ' Are you a bleeder or are you a stimulator? ' "[4] Thus we see, that at this time, not only did practice depend upon theory but the particular practice was entirely dependent upon the particular phase of the accepted theory that the physician emphasized in his own mind.

This was not so in dentistry. John Burdell, who held with Fox, that decay begins in the " bony part " of the tooth and is seen through the enamel[5] and L. S. Parmly who believed that caries begins in the enamel, went about the prosaic task of removing decay and filling teeth in much the same way.

[1] LeSage, A. R., *The adventures of Gil Blas.* N. Y.: E. P. Dutton (Everyman's Library No. 438), Vol. 1, p. 96.

[2] Weinberger, B. W., *Pierre Fauchard, surgeon dentist.* Minneapolis: Pierre Fauchard Academy, 1941, p. 62.

[3] Stroemgren, H. L., *Die Zahnheilkunde im achtzehnten Jahrhundert.* Copenhagen: Levin and Munksgaard, 1935, p. 138.

[4] Shafer, H. B., *The American medical profession 1783-1850.* New York City: Columbia Press, 1936, p. 96.

[5] Burdell, Harvey & John, *Observations on the structure, physiology, anatomy and diseases of the teeth in two parts.* N. Y.: Gould & Newman, 1833, p. 80.

This is understandable if we keep in mind the fact that the technical procedures necessary in the removing, replacing and repairing of the teeth were present early in dentistry's history. But, while the relationship of theory to practice for dentistry was different from that of medicine, it was very similar to that of surgery.

Paget has pointed out that "before Hunter's time, surgeons had been 'empirical'; and this word had been used not in its real sense of 'experimental,' but as meaning something discreditable, something not founded on 'principles.' Yet these 'principles' were only thoughts exercised on insufficient facts, gradually but very slowly becoming more nearly sure, but hardly applicable from one century to the next." [6]

Yet the very man who gave to surgery its "principles," John Hunter, expressed his distrust of medical rationalizing when he wrote to Jenner, "Don't think; try! Be patient, be accurate." [7]

A like situation prevailed in France. Fauchard, who was trained as a surgeon during a period in which French surgery was more concerned with new techniques of amputation and excision than with theory, was much more involved with the doing of dentistry rather than with its thinking. His "Chirurgien Dentiste" is a brilliant compilation of the dental practice of the time rather than a futile bantering of theory.

But even into this close similarity between the place of theory in surgery and in dentistry, there creeps a difference, seemingly unimportant on the surface, but really of great consequence. This difference was the fact that dentists were dealing mainly with a tissue that did not heal.

While the "Feldscherer" in the Prussian Army during peace time was released from the pressure of amputations and excisions and settled down to the more mundane business of cutting his officer's hair, the endemic character of dental decay made the removing, replacing and repairing of teeth a much more constant business. Shrewdly enough Mouton observed, in 1746, "That caries and tartar are the two great agents that give business to the dentists." [8]

One would imagine that dentists would be entirely satisfied with a seemingly fortunate state of events that gave them such good business and two such efficient agents. Yet we find that in France, where dentistry in Fauchard's time had won professional status under surgery, while

[6] Paget, Stephen, *John Hunter, man of science and surgeon.* London: T. Fisher Unwin, 1897, p. 16.

[7] *Ibid.*, p. 14.

[8] Mouton, Claude, *Essay d'odontotechnique, ou dissertation sur les dents artificielles.* Paris: A. Boudet, 1746, p. 26.

theories of dental decay are given some attention in the literature, the main emphasis is on the technical side of dentistry. In England, on the other hand, where the practical side of dentistry was not nearly as well developed and the status of the dentist on much less sure ground, a great deal of theorizing was indulged in by the writers on dentistry.

In the first book on dentistry in English, in 1685, Charles Allen explains dental decay as due to the retention " of certain effluviums in the teeth due to the obstruction of their pores, this obstruction being due to the presence of foreign matter on the teeth." [9] To Tolver's way of thinking in 1752, " This Disease is occasioned by a Humour insinuated between the bony fibres of the Teeth." [10] We see, therefore, in these instances an effort to look upon diseases of teeth as just another expression of the influences that made for a diseased state elsewhere in the body in the light of the medical thinking of the day.

Why did these early writers on dentistry, especially in England, find it necessary to expound a theory when these theories did not touch upon practice at any point? The workaday practices of dentistry went on in the same way regardless of the particular theory, or without any theory at all.

To answer this question we must again consider the retarding effect of theory. Stern says, " Among the chief factors which seem to determine the rate of social change, by influencing the incorporation or rejection of an innovation, is vested interest." He goes on to point out that aside from economic interests he refers " to that less tangible vested interest bound up with the struggle to retain status, reputation and prestige." [11]

While dentistry, at the time, had neither reputation, status nor prestige, it had a very definite interest in acquiring all of these things. Although any theory or principles would serve to differentiate dentistry from the hated empirics, a medical theory seemed a magic carpet to the realization of these ends.

Accordingly, Charles Allen, after tactfully dedicating his book to " the most honourable and truly learned the physicians, chirurgions and apothecaries of the City of Dublyn," proceeds to explain dental decay, as we have seen, according to the accepted medical thought of his day. This

[9] Weinberger, B. W., The first English dental publication. *Jour. Amer. Dent. Assoc.*, 1924, Vol. 11, pp. 506-522.

[10] Tolver, A., *A treatise on the teeth.* London: L. Davis, 1752.

[11] Stern, B. J., *Social factors in medical progress.* N. Y.: Columbia University Press, 1927, p. 11.

easy formula worked well enough for those who followed Allen. But, the publication in 1771, of "The Natural History of the Human Teeth," by John Hunter, made it obsolete.

John Hunter had no respect for time-honored observations and did not have any use for baseless theorizing. Hunter accepted no one's observations or conclusions. He observed the teeth, not only of man, but of animals of every type. He attempted to inject teeth, heated them, and put them in acid. Most of his observations led him to the conclusion that teeth were different from other bones in the body. He stated that "From these experiments it would appear, that the Teeth are to be considered as extraneous bodies with respect to their circulation to their substance"; but he significantly added, "they have most certainly a living principle, by which means they make part of the body, . . ." [12] Therefore, in Hunter's work we see for the first time, established on a scientific basis, the differences between teeth and bones. It was his observation that "Nature seems, in some measure, to have considered the Teeth as aliens, only giving them nourishment while sound and fit for service, but not allowing them when diseased the common benefits of that society in which they are placed." [13] This, in turn, led to the important conclusion that "one might at first imagine, that the diseases of the teeth must be very simple, and like those which take place everywhere else in the bony parts of the body; but experience shews the contrary. The Teeth being singular in their structure, and some other circumstances, have diseases peculiar to themselves." [14] Thus, we see, that Hunter's conclusions consist of two components. The first, based on his observations stressed the specialized character of teeth in the human body, and led to the conclusion that teeth were different from bones. The second, based on his speculations expressed his belief that teeth had in common, with the rest of the body, a "living principle." This view pointed to a similarity between teeth and bones.

The first conclusion was supported by his correct observations regarding decay, namely, that it began on the outside surface and was partial to particular surfaces of the teeth; the second, resulted in his inability to explain decay. In spite of the fact that he observed that particular surfaces of the teeth are the locations for the collection of food and tartar

[12] Hunter, John, *The natural history of the human teeth.* London: J. Johnson, 1771, p. 39.

[13] Hunter, John, *A practical treatise on the diseases of the teeth intended as a supplement to the natural history of those parts.* London: J. Johnson, 1778, p. 12.

[14] *Ibid.*, Introduction, p. 1.

and that here " . . . the juices are pressed and there stagnate . . . ," [15] he was unable to relate these two observations because his " living principle " stood in the way. Since he could not explain dental decay as due to the latter, " owing to a deficiency of nourishment from some fault in the vascular system," and since he denied the action " . . . from a menstrua, which have a power of dissolving part of a tooth "; he was faced by a contradiction which he resolved for himself by saying " We may, therefore reasonably suppose, that it is a disease arising originally in the Tooth itself, . . . " [16]

Joseph Fox, who delivered the lectures at Guy's Hospital which formed the substance of his " Natural History of the Teeth " (1803), avoided the problem by denying that important part of Hunter's contributions which emphasized the differences between teeth and bone. He reached the remarkable conclusion that " The diseases to which the teeth are subject are similar to those which affect the bones in general, and in like manner they have their origins in inflammation. The teeth differ only from bones in not possessing sufficient living power to effect the process of exfoliation." [17] Having gone this far it was inevitable that Fox should conclude that " The proximate cause of caries appears to be an inflammation in the bone of the crown of the tooth, which, on account of its peculiar structure, terminates in mortification." [18]

Fox uses, as a starting point, the innocent conjecture of John Hunter, " that we may, therefore, reasonably suppose that it " (dental decay) " is a disease arising originally in the tooth itself." How Fox, a practicing dentist, and under the influence of Hunter, could make the " observations " that decay started within the tooth and that all surfaces were equally susceptible to the disease, is difficult to understand. Yet, while Fox was able with little difficulty to evade the most significant part of Hunter's work, making tenable the wishful theory of dentistry's kinship with medicine, he found the persistent facts of every day practice more stubborn. He was forced to admit that " when the caries is communicated by contact . . . the decay commences on the surface, and extends to the cavity." [19] Thus we see, while Hunter states that dental decay " . . . begins sometimes in the inside of the Tooth, although but rarely," [20] Fox admits that it sometimes begins outside. Hunter's concession is to his

[15] *Ibid.*, p. 64.
[16] *Ibid.*, pp. 8 and 9.
[17] Fox, Joseph, *The history and treatment of the diseases of the teeth.* London: Thomas Cox, 1806, p. 3.
[18] *Ibid.*, p. 12.
[19] *Ibid.*, p. 20.
[20] Hunter, John, *cf.* note 13, p. 3.

physiological theory, Fox's to his practical observations. Both were attempts to stop up the gap between theory and practice where they did not dovetail. But this inherent weakness in Fox becomes even more evident when we realize that while Hunter expressed great doubt as to the effectiveness of treatment of decayed teeth, Fox had to insist, as a practicing dentist, upon his ability to control dental decay. He was forced into the anomalous situation of attempting to control dental decay while adhering to a theory which denied such a possibility. Fox had to serve both the great agents of caries and tartar and the god of professional prestige, but his theory did not permit divided allegiance. To accept this theory the dentist was forced to sacrifice on the altar of professional prestige his reputation for the ability to control dental decay.

Across the ocean, at the time of the publication of Fox's "Natural History," a young, vigorous country was growing. The United States of America in a short space of a decade was pushing its frontiers westward and developing organizations and institutions to satisfy the limitless needs of a thriving people. It was in this atmosphere that the foundation of the future American dental profession was being laid. The American dentists at the time, unlike those in England and France, were not surgeons. Many of them had come from artisans. Unlike their English and French colleagues, they were not the offspring of a profession which, in Europe, had so recently won the grudging recognition of the medical profession. They knew nothing of the bitter antagonisms between medicine and surgery which had taken place in Europe and which had appeared at no time in the New World. These early dentists, the forebearers of our present profession, were individualists, unencumbered by either guild restrictions or restrictions of any other kind. As practical people, they had very little use for barren theorizing; as an independent people they relied mainly on their own observations and thinking and had no respect for authority.

With this setting in mind, we can better understand John Greenwood's observations found in his copy of Hunter's "Natural History of the Human Teeth." [21]

Greenwood agreed with Hunter on many points; but where he disagreed he did so most violently. For example, his notes on the diseases of the teeth read as follows:

This Doctor Hunter writes about a thing he acknowledges he knows nothing about, which certainly he does not, for he says, that whatever the disorder is that

[21] Dr. B. W. Weinberger's manuscript, "Dentistry, its Origin, Evolution and its Advent in America."

affects the teeth that it is generally attended with pain; then he goes on and says that he believes it is occasioned by the nerve being exposed. Any fool knows that, and then he says that it is not easy to say by what means the nerve becomes exposed. It certainly shows that he was entirely ignorant of the cause of the destruction of the teeth, as he had no opportunity by practice to investigate into it, and only wrote his own opinion on the subject. As to his abilities in the construction of the anatomy of other parts of the human frame, I presume he was a complete master for he practiced it with natural ability, pleasure and profound attention, acknowledged by all learned in the profession. Facts are stubborn things, . . .

But it was no easy thing, even for an outspoken American to disagree with the great Hunter. Greenwood's disagreement was not so much an expression of his lack of confidence in the great English surgeon, as it was an expression of the greater confidence he had in his own observations, a characteristic which was typical of the great John Hunter himself. This confidence of Greenwood is expressed when he writes, " It is surprising to find persons giving a description of what they know nothing about, as Hunter has in the succeeding chapter on the teeth [The Decay of the Teeth, Arising from Rottenness]. The true cause of the decay or destruction of the teeth now fully ascertained by a person who has neither the advantage of a liberal education, nor the least instructions from any person living, except his own practical observation for twenty-four years—from 1784, an American born and followed the seas in his youth—he cannot only stop the decay of teeth, but even cause any teeth to decay either in or out of the head, or any animal's teeth whatever, and stop the progress as quick."

The fact that his confidence was not mere bellicosity or arrogance, but was based on experience, is proven by Greenwood's statement that " The disease as it is called by Dr. Hunter Not Accounted For by him or any other person in the manner I shall explain it. You will find in reading Hunter's opinion that the Teeth are destroyed by disease in the teeth. I have found out by upwards of twenty years constant practice that Dr. Hunter's opinion and observations are entirely wrong. In the first place the Teeth are destroyed and attacked first on the External part of the Tooth which led me to search out the cause Why the Teeth should be thus destroyed. It was several years before I could satisfy myself concerning it, with all my diligence and search, for I saw no good reason given by any Author that wrote on the destruction of the teeth—that is that the teeth are destroyed owing to a disorder in the teeth, etc."

Let us not suppose, however, that for the members of an unformed dental profession in America, there was no need for theory. The Ameri-

can scene which was so conducive to independent thought made the development of theory in dentistry inevitable. But aside from this fact, while the need for prestige because of the fluidity of the social relationships was not as great in America as in Europe, it was nevertheless present. We find at the beginning of most early American dental works, the usual attack upon the empirics whom Benjamin Longbothom, in 1802, characterizes as "those worthy Gentlemen, ill-naturedly nomenclated Quack-Doctors, Toothdrawing Barbers, Nostrum Mongers, and Itinerant Mountebanks." [22]

But, in spite of the desire of the early American dentists to disassociate themselves from this detested group, because surgery was not a stepchild of medicine and because dentistry had arrived and was not derived from surgery, the need for association with medicine was not nearly as great as in England.

As a matter of fact, John Greenwood expressed a theory when he said, "I have fully ascertained by practice and incontrovertible facts that the decay or destruction of the teeth is occasioned by the acidity of the stomach, or what called a quick or strong digestive power, . . ."

This, however, was a do-something theory, because he immediately follows with a practical corollary, namely ". . . it cannot be corrected or stopped but by one means or method, no other will do it. That is this. Brush your gums frequently and your teeth also with a weak alkaly which is common chalk or Spanish Whites—it will certainly preserve them." [23]

John Greenwood's chemical and parasitical theory, however, was a theory for his own use and considering the unorganized state of dentistry in his day, he could have done very little to promulgate it, even if he had wanted to. But while American dentists had no common theory of their own, they were far from ready to accept an imported one, particularly one that had all of the disastrous practical implications that Fox's theory possessed.

How completely repugnant any do-nothing theory was to an American dentist, is best expressed by Benjamin James when he wrote in 1814, that "some authors as if fearful that the dentists may not have sufficient employment, endeavor to encourage inattention to teeth. Instead of acknowledging that disease arises from external means, they impute its origin to internal causes and thereby inculcate a theory which bears the same relation to our teeth, that the doctrine of election does to our souls,

[22] Longbothom, B. F., *Treatise on dentistry, etc.* Baltimore: Prentiss and Cole, 1802.
[23] *Cf.* note 21.

for if everything go by predestination, of what consequence is it, to one or the other, to soul or body, whether we give them a moments attention or carelessly let them shift for themselves?" [24]

But, since in America at the time it was simply not in the nature of things to let either soul or body carelessly shift for themselves, the development of a common theory dynamic in character as opposed to the static nature of Fox's approach, was on the agenda of the day. The need was there, but who was to fulfill it? Dentistry had no Morgan, Shippen or Rush, trained in the best schools of England and equipped either to accept and promulgate the theories they were taught or to effectively disagree with them.

In this situation it is understandable why the dentists of the day such as Skinner,[25] Longbothom, and Josiah F. Flagg,[26] took a middle of the road stand, namely, that dental decay proceeds from *both* external and internal causes. A significant fact, however, is that in spite of this equivocal position they all emphasize the importance of cleanliness of the mouth in preventing dental decay. Such a situation could not prevail for long and in 1818 there appeared in London a small volume by Levi Spear Parmly, an American dentist, which gave to American dentistry a theory of its own.[27]

L. S. Parmly had an unusual training in dentistry for the son of an American farmer.[28] He was trained in Boston, both by Dr. Randolph, a prominent American dentist, and by Dr. Petrie, an English one. He practiced in London for a time and was in intimate contact with the outstanding physicians and surgeons in England and consequently was thoroughly familiar with the work of John Hunter. The extensive travelling of Parmly gave him unusual opportunities and in his preface to his "Lectures on the Cause of Decay," 1821, he points out that "The information which they offer is deduced from observations made by the author in the United States and British America, the West India Islands, France and England, . . ." [29]

[24] James, Benjamin, *A treatise on the management of the teeth.* Boston: C. Callender, 1814.

[25] Skinner, Richard C., *A treatise on the human teeth, etc.* N. Y.: Johnson and Stryker, 1801.

[26] Flagg, Josiah F., *The family dentist, etc.* Boston: J. W. Ingraham, 1822.

[27] Parmly, L. S., *A practical guide to the management of the teeth; comprising a discovery of the origin of caries, or decay of the teeth; with its prevention and cure.* London: J. M. Richardson, 1818.

[28] Thorpe, B. E., *History of dental surgery*, Vol. 3. Fort Wayne: Nat. Art. Pub. Co., 1910, p. 155.

[29] Parmly, L. S., *Lectures on the natural history and management of the teeth; the cause of their decay, the art of preventing its accession.* N. Y.: E. B. Clayton, 1821.

In Parmly, we find a person admirably suited by personality, experience and training to fulfill the need of his day. This American dentist knew, admired and accepted Hunter's valuable observations regarding the decay of teeth. However, unlike Fox, he emphasized the many important differences between teeth and bone that Hunter had pointed out, mainly that teeth are almost extraneous bodies and that decay began externally. Not that he rejected Hunter's "living principle," but his experience in dentistry, in addition to his clear thinking, enabled him to avoid Hunter's pitfall of concluding that "We may therefore reasonably suppose, that it" (dental decay) "is a disease arising originally in the tooth itself." [30] He did this by significantly pointing out that even the "living principle" within the tooth was different; that the teeth were a "part incapable of freeing itself from extraneous accretions, as in the other parts of the living body; and to supply this want of natural power the interference of art appears indispensable." [31] While Parmly accepted all of Hunter's accurate observations and corrected his cautious but misguided speculations, Fox ignored the observations and ran riot with the speculations. So much so, that he was led to the sterile conclusion that "This delightful secret [the discovery of some mode of prevention of caries], although it is pretended to in the advertisements of every quack, we can only expect to acquire when the Philosopher's Stone and the grand panacea have been obtained." [32]

But certainly, Parmly was far from a quack. He checked for himself Hunter's observations regarding dental decay, for he states "that he has now, in his possession, thousands of teeth, extracted from bodies of all ages, that have fallen in battle, inflicted with caries from its first commencement to the last stage of the disease; and he will undertake to satisfy the most skeptical on this point, that caries universally commences *externally*" (italics in original).[33] As a matter of fact, he even points out where Fox has gone astray on this very question when he says "What has in all probability given rise to a contrary opinion in, that the aperture in the enamel, through which this disease finds its admission, is, in many cases, so exceedingly minute, as to escape the detection of all, but those who are aware of its true cause." [34] Fox, unfortunately, was

[30] *Cf.* note 16.
[31] Parmly, *Lectures etc.*, p. 7.
[32] Fox, Joseph, *cf.* note 17, p. 22.
[33] Parmly, L. S., *A practical guide to the management of the teeth, etc.* Philadelphia: Collins and Croft, 1819, pp. 84 and 85.
[34] *Ibid.*, p. 82.

not one of those aware of its true cause. The heritage of John Hunter was carried forward in dentistry by an American dentist who could not only observe accurately, but could think clearly and act energetically.

And Parmly did act energetically indeed. Like Greenwood and the American dentists of the time, he possessed those American characteristics which the Bishop of Louisiana, at the close of the eighteenth century characterized as a "restless and ambitious temper." [25] These people found Parmly's theory a most welcome and palatable substitute for a tedious wait for the discovery of the philosopher's stone. They preferred a theory that "by a Chymical Agency on those relics of the food, which accidentally lodge between them, a deleterious change takes place, constituting an Active Poison, which corrodes their structure." This was a do-something theory because it led to the inevitable conclusion ". . . that the premature decay of the Teeth, is the consequence of uncleanliness, ..." [26] This was something both the dentist and the patient could do something about.

Parmly's activity was concentrated in two main directions. In the first place, he carried out the practical lessons of his theory. He gave courses to laymen as well as to the students of dentistry, invented a new tooth brush, and the now common dental floss, while constantly dunning his own patients with the importance of the hygiene of the mouth and selling them the equipment necessary to achieve this end. On the other hand, aware of the vast influence of Fox among dentists both in England and America, he attacked Fox's theory with equal verve. "Mr. Fox," he writes, "has bewildered himself on this subject, and lost sight of the true cause." [27]

Armed with this as a major premise, Parmly attacked Fox with all the means at his disposal. Where he had facts, he used them. When these were lacking, he used his persuasive logical faculties. Fox's contention that the imperfect formation of teeth was the cause of their decay, provoked the following:

> From the intimate connexion of the Teeth with these great functions of life, Nature has rendered them durable in their substance, combining strength with symmetry; and the idea is absurd, that an unhealthful condition of these organs depends on imperfect formation. Can we conceive that anything comes imperfect from the hand of the Creator into the service of life? Do we not find perfection the attribute of all his works, from the highest to the lowest? [28]

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[25] Beard, C. A. & M. R., *The rise of American civilisation.* N. Y.: Macmillan, 1930, p. 394.

[26] Parmly, L. S., *cf.* note 29, pp. 31-63.

[27] Parmly, L. S., *cf.* note 27, p. 82.

[28] Parmly, L. S., *cf.* note 29, p. 10.

However, the perpetuation of Fox's theory continued. But it is significant to note when, in 1829 in England, J. Patterson Clark maintained that decay began externally in every instance, Parmly was quoted extensively in his book.[39] Even in America, Parmly's theory did not win immediate acceptance. The writers on dentistry of the period tried to accept his theory while still paying their respects to Fox.

Gidney, in 1824, does this simply by stating that there is both internal and external decay but the latter occurs six times as frequently.[40] Fitch, in 1829, attempts a more complicated solution. He states that dental decay has a proximating cause and exciting and predisposing causes. The proximate cause is made up of two components. The first is the inflammation of the bony part, as Fox believed. The second is " . . . , the enamel being previously removed by chemical . . . agents " as Parmly had indicated.[41]

It is interesting to speculate as to the reason Fitch finds it necessary to accept both Parmly and Fox. Why could he not, for example, have accepted Fox's complete theory, including the belief that dental decay starts underneath the enamel. The answer is given clearly when Fitch says:

> I should not so strongly insist upon the principle that caries of the teeth, arises in nearly all cases from external causes, were I not certain of its truth and were it not of such great practical utility. It encourages both the surgeon dentist and the patient to persevere in their efforts to keep the teeth perfectly clean, and to detect and relieve the first appearance of disease. But the former principle, that decay arises inside, will lead the patient to believe, that one half the causes of diseased teeth are out of the reach of art to prevent.[42]

Obviously, Fitch could not accept *all* of Fox and still remain true to his convictions regarding the efficacy of the practices of dentistry. But why then was he not in complete agreement with Parmly's opinion that,

> Where the Teeth are kept literally clean, no disease will ever be perceptible. Their structure will equally stand the summer's heat and winter's cold, the changes of climate, the variation of diet, and even the diseases to which the other parts of the body may be subject from constitutional causes. The opinions I have now suggested, on this important subject, are founded on practical experience.[43]

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[39] Clark, J. Patterson, *A new system of treating the human teeth.* London: Longmans (et al.), 1829.

[40] Gidney, Eleazer, *A treatise on the structure diseases and management of the human teeth.* Utica: A. G. Dauby, 1824, p. 54.

[41] Fitch, Samuel S., *A system of dental surgery.* N. Y.: G. & C. & H. Carvill, 1829. p. 160.

[42] *Ibid.*, p. 151.

[43] *Cf.* note 36.

Probably, in my opinion, this attitude removed the teeth from the body to an extent that Fitch could not readily accept. Although Parmly tried to establish a link between the two by insisting that diseased teeth were the cause of disease elsewhere in the body, this is a relationship which is not completely understood even today. It was much easier for Fitch to claim that various systemic conditions were the exciting and predisposing causes of dental decay.

It is, therefore, quite understandable that one like Fitch, who writes:

> It is to be regretted that our subject has been neglected by a great proportion of the Medical Faculty. They, too generally, consider it as having little or no bearing upon their profession.[44]

should want a closer link.

In this closer tie, a dentist who dreams of the day when his profession shall " assume a correspondent rank among the Medical Sciences " [44] and who dedicates his work to the famous Dr. Nathaniel Chapman, saw a direct path to the exalted position and prestige of the physician. Without this tie, the status of a toothsmith faced him.

In his dilemma, like many of his calling before him, Fitch paid his tribute to the god of professional prestige in the form of compromised thinking.

However, one cannot be too harsh with Fitch. His " System of Dental Surgery " was a milestone in the progress of American dentistry, and he did compile the pertinent dental facts of his day with complete objectivity and subjectivity is to be expected in an adolescent profession. As a matter of fact, this fervent desire to belong, this need for recognition as a learned profession is expressed again at a later date. Speaking at the Adoption of the Constitution of the American Society of Dental Surgeons in 1840, Eleazer Parmly said,

> We have, I presume, all of us, the mortification to know 'that in this country, more particularly than in any other, the community at large have been accustomed to regard men and gentlemen too, as unfit for the drawing rooms of the rich and fashionable' if they attach themselves to the profession which we are resolved to honor and to elevate. It is time to blot from the annals of society this degrading feature, and to claim for ourselves a full equality with the honorable avocations of our fellowmen. We owe it to ourselves; and we owe it especially to our children.[45]

At the same convention, Horace Hayden asked, " If, like the Jews, we are scattered and despised, may we not like that persecuted people, at least hope for a day of restoration to our promised land! " [46]

[44] *Ibid.*, pp. 23 and 24.
[45] *Amer. Jour. Dent. Sc.*, 1839, Vol. 1, p. 163. [46] *Ibid.*, p. 159.

But by this time the profession had grown. A national dental society had been formed; individual and unorganized dentists had matured into a dental profession. They were still far from the promised land, but it was no longer necessary to compromise one's thinking in the hope of getting there sooner. The path to professional prestige was now based on professional accomplishment.

Thus we see that while the need for professional position and prestige was as great as ever, the means of satisfying this need had changed. Conformity with medical thinking was no longer the way and the theoretical thinking of the young profession was emancipated.

As a point of fact, it did not go well for the individual who wanted to gain these ends through the old way. When John Trenor, in 1852, advocated the education of dentists in medical rather than in dental schools, he earned the wrath of the fiery Amos Westcott. After pointing out that he, unlike Trenor, had an " honorable not an honorary " medical degree, that his medical background was useful, but not for the practice of dentistry, Westcott went on to say that Trenor, to be consistent with his acceptance of Fox's theory, should give up the practice of filling teeth to arrest decay and should rather treat the constitutional causes by bleeding, purging and leeching his patients.[47]

The concept of the external origin of dental caries had borne fruit. Levi Spear Parmly had emancipated American dentistry from the stultifying influence of Fox. He gave his profession a dynamic theory of its own which opened wide avenues of investigation. The most significant of these culminated in the work of W. D. Miller, an American dentist working in Koch's laboratory. His " Die Mikroorganismen der Mundhöle " appearing in 1889 explained Parmly's " Chymical Agency " and gave us our present day understanding of the process of dental decay.

[47] Westcott, Amos, *A review of remarks on the professional education of dentists, by John Trenor, dentist of New York.* N. Y.: J. F. Trow, 1852.

MEDICAL PRACTICES IN DETROIT DURING THE WAR OF 1812*

FANNY J. ANDERSON

There are many contrasts between a city experiencing war in 1942 and a city experiencing war in 1812. Studying the latter is a revelation of civic and scientific progress made in the course of 130 years.

In the year 1812, there were nine settlements stretching like a ribbon along the shores of the Great Lakes from the western shore of Lake Erie to Mackinac Island: "The River Miami, The River Raisin, The River Huron of Lake Erie, The River Ecorse, The River Rouge, The River Detroit, The River Huron of Lake St. Clair, The River Sinclair, and The Island of Mackinac." In 1805, Detroit had been chosen as the capital of the vast unexplored Territory of Michigan. The population, of whom the majority were of French extraction, did not exceed 4,762, including the ninety-four men in the garrison at Detroit and seventy-nine at Fort Mackinac.[1] In 1810, it was estimated that Detroit's population was 750, and this number would not have increased appreciably in two years, due to the unsettled conditions along the Canadian border.[2]

Detroit had been incorporated as a town in 1802, and had operated under a charter from the Territory of Indiana until 1805. A second charter, granted by the Territory of Michigan, was repealed in 1809, when the Governor and Judges assumed control of the local government. Under both charters, a marshall was appointed to execute the various ordinances passed by the Board of Trustees. Many of these ordinances had to do with nuisances, such as swine wandering about the streets, litter on the common, and dogs running at large. Among his other duties, the marshall was in charge of regulating the market, the inspection of such foods as flour, tobacco, salted provisions, and the weight and quality

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[1] "Memorial and Representation of the Citizens of Detroit, December 27, 1811." Michigan Pioneer and Historical Society, *Collections* XL (1929), 346-53. [*Collections* hereafter designated *MPHC*.]

[2] Almon E. Parkins, *Historical Geography of Detroit*. University Series, Vol. 3 (Michigan Historical Commission, 1918), p. 132.

of bread. The duties of the town marshall were assumed by the United States Marshall, when the second charter was revoked.[3]

Dr. William McDowell Scott performed the offices of Marshall of the United States for some time prior to his resignation in 1811.[4] In addition to his police duties, the marshall contracted for the care of the indigent sick, and throughout the early entries of the Territorial records, there are items referring to payment of citizens caring for paupers in their homes.[5] One of these is of particular interest:

> Payment of advance made by Stanley Griswold for the relief of Catherine Laselle, nursing child crippled by the conflagration of 11 of June, 1805, parents of which were paupers. Appropriation, $20.25.[6]

In 1809, overseers of the poor, appointed by judges of the district courts, assumed the supervision of these unfortunates.[7]

Dr. Scott, in his capacity as Marshall, superintended the work of digging public wells in 1809.[8] Previously, the Detroit River had been the only means of water supply for the settlement.

The physicians of this early period in American life have been frequently criticized for their poor training and education, and their lack of scientific interest. This may be true, but a definite pattern of American Medicine was slowly taking form. Before the Revolution, young men, wishing to receive a good medical education, went to London or Edinburgh. The only alternative to going abroad was apprenticeship to physicians already in practice, usually for a term of three years. The quality of the training received by this method depended upon the preceptor, and ranged from caring for his horse to assisting in operations.

In 1765, the Pennsylvania Medical School was organized as a branch of the College of Philadelphia, and degrees were given on completion of two years' work. King's College in New York City opened its doors in 1768.[9] The founders and teachers of these schools were graduates of

[3] Detroit. Common Council. *Report of the Historiographer, Clarence M. Burton, March 4, 1913.*

[4] "Scott to Hull, January 19, 1811," *MPHC* XXXII (1903), 524-25.

[5] Michigan Territory. *Laws* (Lansing: W. S. George, 1871), II, 3; III, 84; Stanislas Keenan, *History of Eloise* (Detroit: Thomas Smith Press, 1913), p. 25.

[6] Mich. Terr. *Laws*, II, 3.

[7] Keenan, *op. cit.*, p. 26.

[8] Michigan Territory. *Records of the Governor and Judges, 1806-1836.* Manuscript: Burton Historical Collection.

[9] Henry B. Shafer, *American Medical Profession, 1783-1850* (New York: Columbia University Press, 1936), p. 35; Fielding H. Garrison, *An Introduction to the History of Medicine* (4th ed.; Philadelphia: W. B. Saunders, 1929), p. 422.

Edinburgh University, and it was natural for them to use British texts and British methods in their classes.[10] One European custom, however, was not adopted in America. This was the division between the three branches of Medical Science, medicine, surgery, and pharmacy; ethical practitioners of one branch did not encroach upon the prerogatives of the others. Dr. John Morgan, one of the founders of the Pennsylvania Medical School, advocated this system, but it was not suited to the demands of frontier medicine. American Medicine acquired an eminently practical tendency. In the backwoods, a physician was liable to be called for any emergency from dressing arrow wounds to treating malaria.[11] As there were no corner drugstores, he usually carried his medicines with him.

Then there was the matter of economics. In the long process of settlement from coast to coast, the pioneer doctor often had to go over to farming or public office from sheer lack of patients in thinly settled communities.[12] Judge James Witherell deserted the medical profession for the more lucrative political field. After serving as a soldier through the American Revolution, he apprenticed himself to a doctor in Mansfield, Massachusetts, and began to practice medicine in 1789 in Fairborn, Vermont.[13] After serving a year in Congress, he was appointed Judge of the Michigan Territory in 1808, and offered to dispose of his apparatus and accounts to Dr. Ebenezer Hurd.[14] Inquiring about the opportunities for a young physician in Cleveland in 1809, he received the following reply from Stanley Griswold:

> [A physician] would ride a radius of fifty miles. A young man of the qualifications described by you would be almost certain to succeed eventually to his satisfaction; yet for a short time, at first, if not supplied by other means to support himself, he must keep school (for which there is an opportunity in the winter), or till a piece of ground, or bring on a few goods (for the vending of which it is a good stand), or do something else in union with the practice of physic.[15]

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[10] Edward Kremers and George Urdang, *History of Pharmacy* (Philadelphia: J. B. Lippincott, 1940), p. 229.

[11] Garrison, *op. cit.*, p. 307.

[12] *Ibid.*, p. 220.

[13] Lafayette Wilbur, *Early History of Vermont* (Jericho, Vt.: Roscoe Printing House, 1902), III, 376-77.

[14] "Witherell to Hurd, January 12, 1808," B. F. H. Witherell, *Papers, 1798-1867*. Manuscript: Burton Historical Collection.

[15] "Griswold to Witherell, May 28, 1809." B. F. H. Witherell, *Papers, 1798-1867*. Manuscript: Burton Historical Collection. This inquiry may have concerned Dr. Ebenezer Hurd, who became Judge Witherell's son-in-law.

Dr. Scott, too, who acted as marshall of the Territory, justice of the peace, and judge of common pleas at various times in Detroit, practiced medicine in addition to his other activities. His ledger is a jumble of patients' accounts, fees received for tavern licenses, and bills for groceries.[16]

Four volumes of Dr. William McCoskry's ledgers are in existence, covering a period of about nineteen years of medical practice from 1812 to 1831. His fees ranged from twenty-five cents for extracting a tooth to five dollars for simple surgical operations. Although his books read like a directory of the socially prominent citizens of the town, his income averaged less than one hundred dollars a month, and, after his death, there were many unpaid accounts.[17] His Canadian contemporary, Dr. Herman Melchior Eberts, who had patients on both sides of the Detroit River, also kept accurate day-books. One item is rather surprising, "*Mai 15, 1811, Prix arrangé pour l'année*, £4." This would indicate a yearly contract for care, which in the view of some American leaders was considered contrary to medical ethics.[18]

In 1811, Dr. Stephen Chambers Henry arrived in Detroit from Lancaster, Pennsylvania, to join his uncle in business. Dr. Henry had enjoyed the advantages of college training, and had received his medical degree from the University of Pennsylvania in 1809.[19] However, this degree did not have the same significance that it has today. The medical student served his apprenticeship, and, at the end of each year, for three or four months, he attended classes in anatomy, physiology, surgery, midwifery and the diseases of women and children, materia medica, the theory and practice of medicine, and medical jurisprudence. His degree was awarded after he had repeated the *same* course of lectures, delivered by the *same* instructors for two successive years.[20]

Around 1800, the theory of medicine was based on a system, whose advocate was Benjamin Rush, one of the most prominent physicians in the country. Dr. Rush believed that disease was caused "by the general constitution of the air, cooperating with miasmata." The patient had to be "depressed" in order to remove the irritation caused by the miasmata,

[16] William McDowell Scott, *Ledger, 1803-1812.* Manuscript: B. H. C.

[17] William McCoskry, *Ledgers, 1812-1831.* Manuscript, 4 vols.; B. H. C.

[18] Richard R. Elliott, "French Race in Detroit and Vicinity a Century Ago," *Detroit News Tribune*, November 2, 1902; Richard H. Shryock, *Development of Modern Medicine* (Philadelphia: University of Pennsylvania Press, 1936), p. 258.

[19] Louise Rau, "Detroit Biographies. James Henry." Burton Historical Collection, *Leaflets* VII (1929), 77.

[20] Shafer, *op. cit.*, chapter II.

and then rehabilitated by means of diet and tonics. To bring about the "depression," he was plied with emetics and purges; if these were not considered effective enough, the physician resorted to venesection.[21]

Medical men became fairly good at diagnosis by observation, but treatment was without knowledge of the fundamentals. The beginnings of pathology, physiology, biological chemistry, and bacteriology were still fifty years distant. Even the common tools of the physician of today, such as the thermometer and the stethoscope, were not then in use.[22]

The physician of the early nineteenth century avoided surgery, if possible. He limited himself to the opening of abscesses, or the removal of tumors, and foreign matter from the eye. Amputations were performed from necessity, but the mortality was high. The operator often had only a theoretical training in anatomy and no understanding of injury to the nerves and blood vessels. Modern surgery waited upon the discovery of anesthesia and the development of aseptic technique. Alcohol and opium were administered to blunt sensation, but were quite unreliable, for the patient was usually hypersensitive to pain because of his fears.[23] Operations were not performed in spotless operating-rooms. Dr. Henry related that he was performing an amputation within the Fort, witnessed by General Hull, just before the white flag was flown from the ramparts. He described it as a "dreadful sight, but not reason enough to surrender."[24]

Bleeding figured prominently in the records kept by Detroit physicians. The concoctions of a previous century, which sounded like the witches' brew in "Macbeth," have disappeared from their journals. Drugs used by Dr. McCoskry appear in the Pharmacopoeia today, but doctors do not place as much faith in their efficacy as he did.[25] One of the drugs mentioned frequently in his ledgers is cinchona, used in the treatment of "intermittent fever," now known as "malaria," so prevalent in the region during Dr. McCoskry's life-time. Two books, bearing his autograph on the title-pages, show his interest in "fevers." These texts, Jackson's

[21] Geddes Smith, *A Plague on Us* (New York: Commonwealth Fund, 1941), p. 13-14; Cecil K. Drinker, *Not So Long Ago* (New York: Oxford University Press, 1937), p. 144; P. M. Ashburn, *History of the Medical Department of the United States Army* (Boston: Houghton, Mifflin, 1929), p. 19.

[22] Drinker, *op. cit.*, pp. 143-44.

[23] Ashburn, *op. cit.*, pp. 37-38.

[24] "S. C. Henry to Mrs. John Henry, October 3, 1813," *Pennsylvania Magazine of History and Biography*, XXI (1897), 123-24.

[25] Howell Begle, "A Doctor's Records of a Hundred Years Ago," *Michigan State Medical Society, Journal*, XXXII (1933), 565-67.

"Treatise on the Fevers of Jamaica, with Observations on the Intermitting Fever of America," published in 1795, and Tissot's "Essay on Bilious Fevers," published in 1760, are now in the Medical Science Department of the Detroit Public Library.[26]

A newspaper was not published in Detroit until 1817, so that it is difficult to learn what patent medicines were popular here in 1812. Americans who had migrated from the eastern states would have been familiar with many of the nostrums and cure-alls circulated there. The earliest patent medicine in America, "Tuscora Rice," was distributed in 1711. The famous magnetic tractors of Elisha Perkins were popular after the Revolution. Besides these, there were various quassia cups, charms, and anodyne necklaces to overcome stubborn complaints.[27] One such remedy is mentioned in a request to Charles Askin in 1807, "Mr. Louis Barthe begs you will try and procure for him 2 Elk skins as a cure for his leg."[28]

In frontier homes, the women frequently "doctored" the family with various herbs and home-made brews, such as peppermint water, catnip tea, camomile tea, asafoetida, Daffy's Elixir, laudanum, castor oil, plasters of sulphur and molasses, bark, onion and deer suet, honey flour, and burgundy pitch.[29]

The English Physician was the first book in English, popularizing medical knowledge. This was written by Nicholas Culpepper in the seventeenth century, and has had a host of successors even to the present day.[30] One of the stand-bys of the women of Philadelphia in the eighteenth and early nineteenth centuries was William Buchan's *Domestic Medicine, or The Family Physician*.[31] Buchan was a reputable physician who had studied medicine in Edinburgh. His book, first published in 1769, went through nineteen editions in England and America. Dr. John Ruhräh, the eminent pediatrician, wrote of it, "His advice on the care of children could be used today."[32] A copy, published in Philadelphia in 1772, presented to the Medical Science Department of the Detroit Public

[26] Robert Jackson, *Treatise on the Fevers of Jamaica* (Philadelphia: R. Campbell, 1795); S. A. D. Tissot, *Essay on Bilious Fevers*, 1760.

[27] Drinker, *op. cit.*, p. 45; Garrison, *op. cit.*, p. 402.

[28] Milo Quaife, editor, *John Askin Papers* (Detroit: Detroit Public Library, 1928), II, 539.

[29] Drinker, *op. cit.*, pp. 43-44.

[30] Rudyard Kipling, "Story of Nicholas Culpepper," *Lancet* II (1928), 1061; "Nicholas Culpepper, 1616-1654," *American Journal of Surgery*, XXVII (1935), 557.

[31] Drinker, *op. cit.*, p. 65.

[32] John Ruhräh, "William Buchan (1729-1805)," *American Journal of the Diseases of Children*, XLII (1931), 403-408.

Library, bears the inscription, "Mrs. Margaretta Leib, Detroit, December 1st anno domini, 1817."[83]

At the outbreak of the War, there were five physicians living in or near Detroit, of whom we have definite information — Dr. William Brown, Dr. Stephen C. Henry, Dr. William McCoskry, Dr. William McDowell Scott, and Judge James Witherell.[84] Muster rolls and army records do not list these men as surgeons, but there is reason to believe that they gave their medical services wherever needed. Dr. Brown, a highly respected practitioner, was a sergeant in one of the companies of militia.[85] His signature appears on a certificate of health on which he designates himself as "acting surgeon."[86] Dr. Scott had formerly been an officer in the "Legionary Corps" and probably served in that capacity again. In 1814, he was appointed a hospital surgeon's mate from the Michigan Territory.[87] Dr. McCoskry had a wealth of experience to bring to the relief of the soldiers, for he had served in the Medical Department of the United States from 1790 until his retirement in 1802. During that time he had been promoted from surgeon's mate to the rank of surgeon, had taken part in General St. Clair's disastrous campaign and in General Wayne's triumphant expedition.[88] Yet no record exists to show that he was called upon to organize or direct any medical service to the troops in the War of 1812.

When war was declared, the United States Medical Department was loosely organized, its members with little authority and poorly paid. It was not until 1818 that the United States Army Medical Corps was organized under a competent surgeon general.[89] In 1812, each regiment had it own surgeon and surgeon's mates, when these could be recruited. The "Rules and Regulations of the Hospital and Medical Department of the Army for 1813" give some idea of its inadequacy.

It shall be the duty of the Physician and the Surgeon General to prescribe rules for the government of the hospitals of the army; to see these enforced; to appoint

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[83] William Buchan, *Domestic Medicine* (Philadelphia: R. Aitken, 1772).

[84] See Biographical Data at end of paper.

[85] Clarence M. Burton, *The City of Detroit, Michigan, 1701-1922* (Detroit: S. J. Clarke Publishing Co., 1922), II, 988.

[86] "Certificate, June 24, 1812." B. F. H. Witherell, *Papers, 1798-1867*. Manuscript: Burton Historical Collection.

[87] Harvey E. Brown, *The Medical Department of the United States Army from 1775 to 1873* (Washington: Surgeon General's Office, 1873), p. 279.

[88] Brown, *op. cit.*, pp. 72-73.

[89] James D. Edgar, "Army Medical Department in the War of 1812," *Military Surgeon*, LX (1927), 301-13.

stewards and nurses; to call for and receive returns of medicines, surgical instruments and hospital stores; to authorize and regulate the supply of regimental medicine chests; to make out half-yearly returns of these, and of the sick (in hospitals) to the War Department and yearly estimates of what may be wanted for the supply of the army. The Apothecary General shall assist the Physician and the Surgeon General in the discharge of the above mentioned duties and shall receive and obey his orders in relation thereto.[40]

Dr. Richard Allison, who had served under General Wayne, had been requested by Governor Meigs of Ohio to attend the volunteers of that state, but "he was not willing to leave his practice for the emolument of a regimental surgeon."[41] In the emergency, Dr. Abraham Edwards was appointed to superintend the Medical Department of Hull's army, resigning his captaincy in the 19th Regiment of Infantry from Ohio to do so.[42] He had enlisted in the Medical Department of the United States from New Jersey in 1804 and resigned in 1810.[43]

On May 23, 1812, General Hull was notified by the War Department that Dr. Josiah Foster, "late surgeon of the 4th Regiment," had been appointed hospital surgeon and was on his way to Detroit.[44] In relating his misfortunes later, General Hull stated that Dr. Foster died soon after his arrival in Detroit, and that "he was commencing the best arrangements in the department of which he was principal with the very small means he possessed."[45] No doubt this statement referred to the loss of hospital supplies during Hull's march from Ohio. On July 1, in order to spare his worn-out pack-horses, the general chartered the ship *Cuyhoga* to carry the supplies, sick soldiers, and officers' baggage to Detroit.[46] The schooner was captured by the British as it passed Fort Malden. Loss of the hospital supplies was indeed a catastrophe, for transportation was difficult in the best of times, and requisitions had to be secured through the quartermaster and from army contractors, a tedious process.[47] Replenishment of the stores, including "various surgical instruments," was on the way to the beleaguered city on August 12, but it is doubtful whether they arrived in time.[48] Dr. Edwards assumed the duties of the hospital surgeon after Dr. Foster's death.[49]

[40] U. S. Congress. *American State Papers. Documents Legislative and Executive, 1832-1836.* 6 vols.; Class V, "Military Affairs," I, p. 431.
[41] "Hull to Eustis, May 13, 1812," *MPHC*, XL (1929), 375.
[42] "Correspondence between Eustis and Hull," *MPHC*, XL (1929), 384, 388.
[43] Brown, *op. cit.*, p. 80, p. 274. [44] "Eustis to Hull," *MPHC*, XL (1929), 379.
[45] "Hull to Eustis, August 26, 1812," *MPHC*, XL (1929), 468.
[46] Burton, *op. cit.*, II, 986-87. [47] Edgar, *op. cit.*, p. 302.
[48] "Eustis to Hull, August 15, 1812," *MPHC*, XL (1929), 449.
[49] "Edwards to Eustis, September 17, 1812," *ibid.*, 488.

Whether or not a makeshift hospital was located within the fort is not known. General Hull had notified Secretary of War Eustis that a hospital at Detroit would be necessary.[50] Among the Gabriel Richard *Papers* is a note, signed by James Abbott, acknowledging indebtedness "by the United States for one month's rent of an Hospital, ten dollars." This may have referred to the government use of the Spring Hill School, operated by Father Richard.[51] Gabriel Richard, far-seeing citizen that he was, had realized the need of an hospital in a growing community in 1807, when he presented a petition to the Governor and Judges, requesting that land be granted for public schools and an hospital, but his appeal was "ordered to be considered."[52] After the evacuation by the British, Governor Hull's former residence, located at the corner of Randolph and Jefferson Avenues, was utilized as an army hospital.[53] Dr. Cornelius Cunningham, garrison surgeon's mate, was stationed in Detroit in 1813.[54]

While medical care was available at Detroit, it was necessary to provide surgeons for the care of those units of the Michigan militia stationed at remote points along the waterway. Major Witherell was therefore authorized to enter into contracts with physicians at the River Miami of Lake Erie, the River Raisin, and the River Huron of Lake St. Clair, as in his judgment circumstances might require. This order was promptly carried out at the River Raisin, at least, and Dr. Peter J. Austin entered into a contract with the Government on June 7, 1812, by which he received $33.33 per month "for attendance on the militia at the Rapids of the Miami of Lake Erie, at the River Raisin, or at any place between those positions." He made little profit on the transaction, as he furnished his own medicines, which amounted, in one requisition alone, to nine dollars.[55]

With Hull's inglorious capitulation, Detroit ceased to have an active part in the War.[56] Colonel Henry Proctor was placed in command of the

[50] "Hull to Eustis, May 13, 1812," *ibid.*, 375.

[51] Gabriel Richard, *Papers, 1784-1822*. Copy from the original in the Roman Catholic Church Archives, Bishop's Residence, Detroit. Manuscript: Burton Historical Collection.

[52] Mich. Terr. *Records, 1806-36*, p. 104.

[53] Clarence M. Burton, *Some Physicians of Old Detroit*. Typescript; Burton Historical Collection.

[54] *American State Papers*. Class V, "Military Affairs," I, 391.

[55] "Correspondence between James Witherell and Peter J. Austin, June 6, 7; July 23, 28, 1812." B. F. H. Witherell, *Papers, 1798-1867*. Manuscript: Burton Historical Collection. A bill for medical supplies furnished the surgeon of the 5th Regiment of Detached Militia of Kentucky, 1812, gives a detailed list of instruments, drugs, and text-books in common use. Francis Navarre, *Papers, 1763-1826*. Manuscript: B. H. C.

[56] An interesting medical account of naval and military engagements near Detroit may

town by the British. The choice was not a happy one, for no attempt was made to control the Indians, nor to bring any real relief to the inhabitants, in spite of Judge Augustus Woodward's efforts in their behalf. Major Witherell was sent as a prisoner to Kingston, and later paroled.[57] Dr. Henry was taken into custody, but later released.[58] Dr. Brown was ordered to leave and there is mention of a "Dr. Brown" found administering to American prisoners at Sandwich on February 4, 1813.[59] Dr. Scott was imprisoned at Quebec.[60] Dr. McCoskry, also, was probably banished, as a lapse appears in his carefully kept ledgers from September, 1812, to July, 1814.[61] Dr. Edwards was taken prisoner, and later paroled, too. His report of medical supplies and instruments, saved after the surrender, is of interest:

> 1 case amputating instruments, 2 cases trepanning instruments, 4 cases pocket instruments, 2 metallic catheters, money from the sale of hospital whiskey, 1 case teeth instruments, 1 Cooper's Surgery, 1 Duncan's Dispensatory, 1 Cullen's Practice.[62]

The last three items were texts in common use by the profession, all written by British authors.

Governor Cass described the condition of the country around Detroit after the evacuation by the British as "deplorable and entirely exhausted of its resources."[63] Indeed, the plight of the inhabitants was so distressing that President James Madison appealed to Congress for their relief.[64]

be found in: Hal C. Wyman, "Remarks on the Surgery of the War of 1812," *Physician and Surgeon*, XXIX (1907), 203-09.

[57] Wilbur, *op. cit.*, III, 376-77.

[58] "S. C. Henry to Mrs. J. Henry, October 3, 1813," *Pennsylvania Magazine of History and Biography*, XXI (1897), 123-24.

[59] Quaife, *op. cit.*, II, 234-35; "McKeehan to Major General Dearborn, May 24, 1813," *MPHC*, XV (1890), 304-05.

[60] "Scott to Col. Gardner, October 8, 1813," *MPHC*, XV (1890), 406-07.

[61] McCoskry, *Ledgers, 1812-1831.*

[62] "Edwards to Eustis, October 16, 1812," *MPHC*, XL (1929), 488-89. Samuel Cooper (1781-1848) wrote several works on surgery. The one referred to may have been the *Dictionary of Practical Surgery* (American edition, issued with notes and additions by John Syng Dorsey; Philadelphia: B. & T. Kite, 1810).

Andrew Duncan, *Edinburgh New Dispensary* (4th ed.; Philadelphia: T. Dobson, 1796).

William Cullen, *First Lines of the Practice of Physic, With Practical and Explanatory Notes by John Rotheram* (2 vols.; New York: L. Nichols, 1801). "This text was authoritative on medical practice even among the pioneers and 'forty-niners' in the Far West."—F. H. Garrison, *Introduction to Medical History*, p. 369. A copy of this edition is preserved in the Medical Science Department of the Detroit Public Library, and bears the autograph of "Lewis Cass" on the title-pages.

[63] "Cass to Armstrong, October 21, 1813," *MPHC*, XL (1929), 538.

[64] *American State Papers.* Class V, I, 510.

The first two of the grisly Four Horsemen had already thundered over the recumbent town. Pestilence and Death followed in their wake.

Military movements throughout the course of history have been the means of transmitting epidemic diseases from country to country and from region to region.[65] The War of 1812 was no exception. Recruits were hard to discipline and officers often untrained, not realizing the necessity of sanitary precautions.[66] Military routine and hardships were not conducive to good health, even under the best conditions. Food spoiled easily in summer, causing dysentery and other complaints; in winter, there was a scarcity of vegetables. Dr. James Mann, an army surgeon in the eastern theater of the War, described the necessity of a heavy meat diet:

> Vegetables, excepting bread, are not a part of his [the soldier's] ration. The meat allowance is more than he requires were vegetables made a part of his ration, and where it might be convenient to commute a part of the meat for beans and peas, it would conduce to his health. But in the active services, the proposed commutation would be impossible as the transportation of animal food being less bulky is less expensive. The beef ration of an army frequently travels with the troops.[67]

As a result, the men often suffered from scurvy, in spite of the fact that a cure for the disease was already known.[68]

The population of 1812 were hard drinkers and intemperance was too deep-rooted to be eradicated from the army.[69] One gill of whiskey or brandy was the daily ration, and was not abolished until 1831, when Lewis Cass became Secretary of War.[70] When epidemics swept through the camps, the men had little resistence to fight them.

In the winter of 1812-1813, a disease resembling Pneumonia appeared in New England. For four years thereafter, it re-appeared each winter, slowly spreading over the country.[71] The peak of the epidemic reached

[65] Hans Zinsser, *Rats, Lice and History* (Boston: Atlantic Monthly Press, 1935), p. 120.

[66] Edgar, *op. cit.*, p. 304.

[67] James Mann, *Medical Sketches of the Campaigns of 1812, 1813, 1814, to Which Are Added Surgical Cases* (Dedham: H. Mann, 1816), p. 237.

[68] Alfred F. Hess, *Scurvy, Past and Present* (Philadelphia: J. B. Lippincott, 1920); Louis Roddis, "Short History of Nautical Medicine," *Annals of Medical History*, 3rd ser., III (1941), 210-11.

[69] Charles W. Ayars, "Some Notes on the Medical Service of the Army, 1812-1839," *Military Surgeon*, L (1922), p. 512.

[70] William Young, *Sketch of the Life and Public Service of General Lewis Cass* (1865), p. 126.

[71] Edgar, *op. cit.*, pp. 304, 309.

Detroit in the Fall and Winter of 1813. On November 28, 1813, Cass, in a communication urging that medicine be sent to the hospital post-haste, reported that there were 1300 sick. In his monthly report of the troops, issued December 18, 1813, his figures showed that thirty-one officers and men were victims, and 1261 of the rank and file, out of a total of 2527; 106 had died since the previous report.[72] Dr. Mann, describing the scourge in the East, referred to its rapid course, deliriousness, suffocation, and pains in the chest.[73] An article, appearing in a medical journal in 1852, referred to the disease as it manifested itself in Detroit, as "brain fever," indicating probable nervous and mental complications.[74] After an interval of 130 years, it is not wise to label vague groups of symptoms, but those mentioned resemble the horrible influenza epidemic of 1918 in a striking way.[75] Dr. Mann stated that John Bell, the noted British physician of the period, recounted a similar course of the epidemic in Europe, and it is quite possible that British soldiers, transported to America, may have hastened its visitation.[76]

A disease endemic to Michigan was malaria, the "fever and ague" of the early settlers, which would figure prominently in the history of the State until the 1850's, when drainage would have eradicated the mosquito carrier.[77] The inhabitants blamed it upon "dampness and fog," took cinchona, or brewed concoctions of their own invention, and carried on their tasks between "fits."[78]

While at Fort Defiance in September, 1794, General Wayne noted that the "sickness among the troops" abated after the first frosts.[79] Dr. Joseph Lovell, who later became the first Surgeon-General of the reorganized Medical Department of the Army, reported on June 30, 1817, that "cases of intermittent fever had been particularly numerous at Detroit. This complaint always prevails more or less among the troops."[80] Perhaps this malady may have been indirectly responsible for the surrender of Detroit in 1812. General Hull, in defense of his action, wrote to the Secretary of War that

[72] "Abstract of the Monthly Report of the Troops Under Cass, December 18, 1813," *MPHC*, XL (1929), 555.

[73] Mann, *op. cit.*, p. 19.

[74] George Mendenhall and Zina Pitcher, "Report on Epidemics in Michigan," American Medical Association, *Transactions*, V (1852), 503-21.

[75] Edgar, *op. cit.*, p. 309.

[76] Mann, *op. cit.*, p. 19.

[77] Mark F. Boyd, "An Historical Sketch of the Prevalence of Malaria in the United States," *American Journal of Tropical Medicine*, XXI (1941), 223-44.

[78] Quaife, *op. cit.*, I, 553; II, 761-63.

[79] "General Wayne's Orderly Book," *MPHC*, XXXIV (1905), 551-52.

[80] Brown, *op. cit.*, p. 104.

The strength of the Army was reduced and I had not exceeding 800 men at my disposal. Many were new troops, unaccustomed to camp life. . . . There was a large number of sick, unprovided with medicines and comforts necessary for their situation.[81]

This belief is strengthened by Kingsbury's advice to the Secretary of War on May 31, 1813, to send an army to besiege Fort Malden before August, "for then the fever is often prevalent with persons not accustomed to the Lakes."[82]

In spite of a long series of disasters, ending in surrender to the enemy, Detroit survived the War of 1812, and played her rôle in the pageant of the American frontier, a frontier that fought its Indians and its malaria, and produced not only a sturdy people, but a rugged type of American medicine.

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[81] "Hull to Eustis, August 26, 1812," *MPHC,* XL (1929), 466.

[82] "Kingsbury to Armstrong, May 31, 1813," *MPHC,* XL (1929), 529.

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TEXTS AND DOCUMENTS

OLEUM SAVININUM: AN EARLY MEDIEVAL SYNTHESIS OF MEDICAL PRESCRIPTIONS

LOREN C. MacKINNEY

In the early middle ages physicians relied principally on medicines for healing. For their medical prescriptions they relied on (1) medieval Latin versions of classical works, (2) prescription collections called *antidotaria* and *receptaria*, and (3) stray prescriptions some of which were scribbled on margins and blank spaces in manuscripts. Of these three classes of materials, the first has been pretty thoroughly studied. In past centuries medical historians and classicists have performed wonders in the editing and study of the medieval manuscripts of the classical works of Hippocrates, Galen, Oribase, etc. In recent years, considerable attention has been given to the *antidotaria* and *receptaria*. Of similarly enhanced interest to modern medical historians, are the stray prescriptions found here and there, in both medical and non-medical manuscripts. They exemplify the medical *marginalia* of folk medicine and every day remedies used by monks, priests, and amateur lay practitioners. From the literary point of view some of them also exemplify the synthesizing mind of the early middle ages, in its more constructive moods, as it collected available medical information and organized it for practical use.

Such is the treatise under consideration, a short medical compilation inserted in a manuscript of miscellanies (historical, literary, and religious) which was copied at about the year 1000 in the famous French monastery of St. Benedict at Fleury on the Loire River. The manuscript, now in the Bibliothèque Nationale at Paris (BN Lat. 6400 B) contains portions of Eusebius' Chronicle, Boethius' Commentary on Aristotle, a portion of Aristotle's Categories, Smaragdus' Commentary on Donatus' Grammar, bits of poetry, portions of a poetical Life of St. Germanus and of Arator's (?) poetical Life of St. Paul, a treatise *de computo*, and the two-page medical treatise entitled *Oleum Savininum*; i. e., Oil of Savin or Sabine Oil.[1] Although portions of the manuscript date from the ninth,

[1] *Oleum savinum* (*sabinum, savininum*) is usually interpreted as oil of savin. Savin is a juniper (*juniperus sabina*). The name savin (*savina* or *sabina*) is derived from the Sabine region of Italy in which it flourished in classical times. The herb and its juice

tenth, and possibly eleventh centuries, Professor Frederick Carey of the University of California (at Los Angeles), the leading American authority on early Fleury manuscripts, is reasonably certain that folios 86v-87r, which contain the *Oleum Savininum* treatise, were written at Fleury in the late tenth century.[2]

Apparently this brief treatise was a synthesis of material collected from current handbooks, and not merely an excerpt from a classical work. *Oleum savininum* (*sabinum*, etc.) is conspicuously absent from the works of Hippocrates, Theophrastus, Cato the Elder, Varro, Celsus, and Pliny the Elder. To be sure, Dioscorides discussed the various medical uses of the *herb* savin (*βράθυς*, in Greek), but he seems to have known nothing of *oil* of savin; in one passage he mentioned the use of the herb in calefacient unguents.[3] Later Greek writers such as Galen and Oribase adopted Dioscorides' material on savin.[4]

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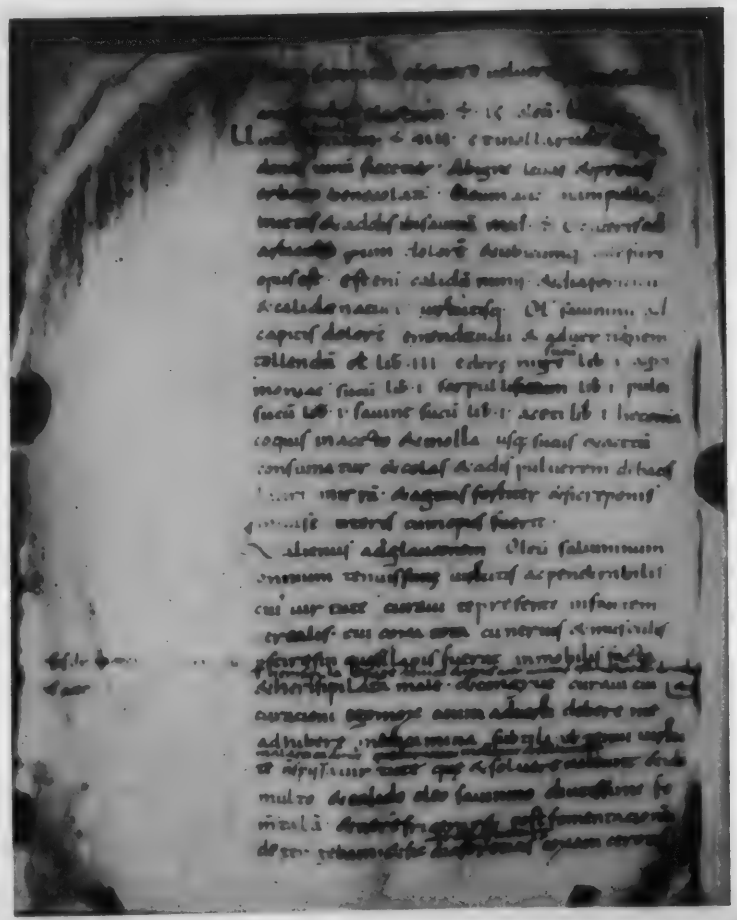
have been known since ancient times as an acrid irritant, calefacient, desiccant, and abortifacient. They are also used as vermifuges, emmenagogues and (locally) for ulcers, abscessed teeth, gout, and rheumatism. According to modern *pharmacopociae*, *oleum sabinae* is the volatile oil from juniper tops distilled in water. Ancient and medieval nomenclature, however, differ from that of our day. Then the juice, whether of juniper or other herbs, was called *succus*, whereas *oleum* comprised a mixture of oil with the macerated herb or its juice. In none of the passages which we shall cite concerning *oleum savininum* (*sabinum*) is there evidence that the writer referred to juice of juniper. In most cases the passages are concerned with relaxing oils or ointments which could not have contained juniper juice, which is an acrid irritant. In classical times *oleum sabinum* (*Sabinae*) signified Sabine *olive* oil. In medieval times *oleum savininum* (*sabinum*, *savinum*) signified either Sabine olive oil or any oil mixed with juniper.

[2] Folios 1, 9, and 143 of the ms. have Fleury library signatures. I am indebted, not only to Professor Carey for assistance in solving the paleographical problems of this study, but also to my colleague, Professor Simkins, who checked my readings of the text and my translations, and made numerous suggestions.

[3] The medical portion of Dioscorides' text reads as follows (in Latin) ". . . nomas compescunt, et phlegmonas adhibita mitigant: nigritias et sordes cum melle inducta repurgant, carbunculosque circumquaque rumpunt. Cum vino autem pota, sanguinem per urinas educunt et partus expellunt: idipsum tum appositu, tum etiam suffitu, praestat. Calfactoriis etiam unguentis, ac privatim gleucino immiscentur." *De Medica Materia*, i, 104 (Janus-Antonius edition, *Opera Quae Extant Omnia*, 1598, Wechelus, p. 55). For convenience, citations from the works of Dioscorides and Galen are in Latin rather than the original Greek.

[4] Galen, *De Simplicium Medicamentorum Temperamentis ac Facultatibus*, vi, 2 (Kuhn edition, XI, 853-4) has a passage on *βράθυς* similar to Dioscorides' concerning savin and unguents. It reads ". . . unguentis inditur. . . ." An early medieval Latin *Alphabetum Galieni ad Paternianum* (Chartres ms. 62 folio 62v), under the title *herba savina*, has the Dioscorides-Galen material in much condensed form but with no reference to unguents. Oribase, likewise, epitomized this material in the alphabetical list of simples in his *Euporistes*, ii, 1 (Bussemaker and Daremberg edition, *Oeuvres d'Oribase*, V, 606). Later we shall cite passages from these writers concerning sabine *oil*.



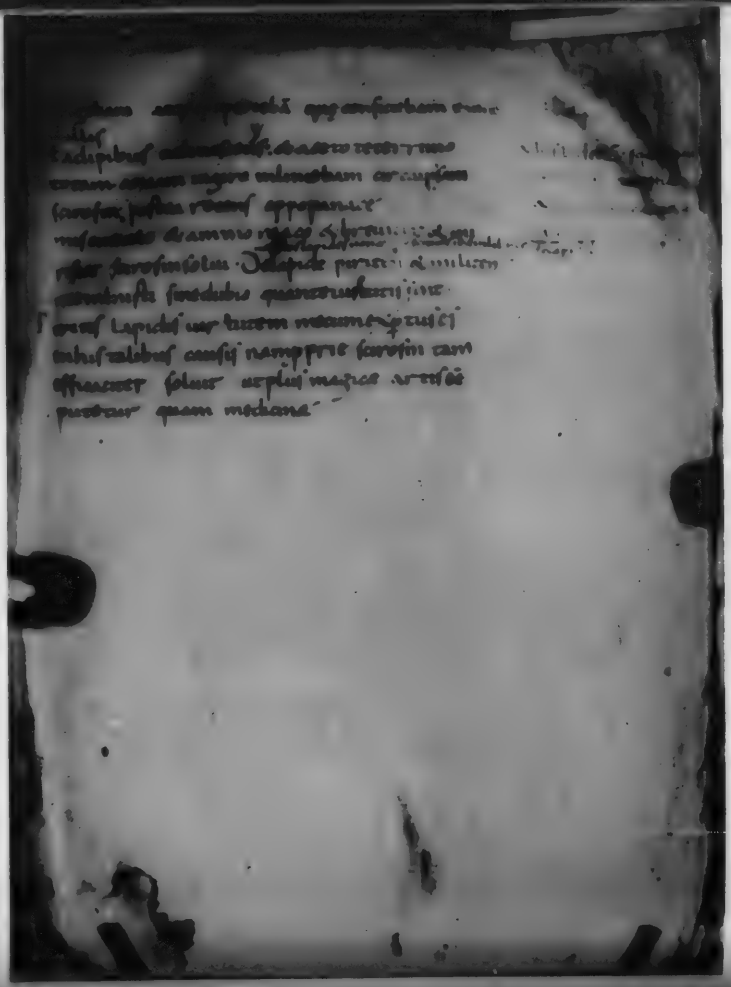


Plate I. Oleum Savinum.

PLATE I. Olenus scrutator.

The earliest known reference to *oleum sabinum* is in the *Compositiones* of Scribonius Largus, who wrote his handbook at Rome during the reign of Nero. He gave directions for compounding a " wonderful ointment for paralysis " by mixing Sabine olive oil (*oleum sabinum*), crushed wild cucumber root, and walnuts, then adding wax, several kinds of oil, and several herbs. The Latin text reads as follows:

Sed ad paralysin mirifice hoc acopum facit, quo oportet in sole diu fricare aut loco flamma praecalfacto: olei sabini p. *XXV [pondus denarii 25], cucumeris silvatici recentis radicis p. *XV. Haec radix magnitudine nucis iuglandis concisa vaso fictili novo ex oleo coquitur, donec sucum omnem remittat et quasi arida sit; post hoc abicitur. Per linteum vel colum transmisso oleo adicitur, dum calet, cerae Ponticae in frustra redactae pondo libra, olei laurini pondo libra, olei cyprini pondo libra, olei lilini pondo libra, olei veteris pondo dua, piperis albi contusi et per cribrum tenuissimum transmissi p. *I, pyrethri contusi et per idem cribrum transmissi p. *I. Haec in unum miscerentur, reponuntur vaso fictili. Facit praeterea ad lumborum et omnem dolorem corporis, et praecipue nervorum. Muliebres locos durissimos mollit, cum diu aliis medicamentis nihil profectum est.[5]

Strangely enough, Scribonius' contemporary, Pliny the Elder, in the pharmaceutical miscellanies of his *Natural History,* failed even to mention *oleum sabinum,* though he repeated much of Dioscorides' material concerning the herb, which he called *sabina.*[6] A century later Galen introduced into one of his medical works the same Dioscorides material concerning *βράθυς,*[7] and also mentioned in several of his treatises a " Sabine " oil (*Σαβῖνον*) which seems to have been oil of Sabine olives.[8] In each case

[5] Scribonius Largus, *Compositiones,* CLVI (Helmreich edition, Leipzig, 1887, pp. 64-5).

[6] Pliny, *Naturalis Historiae,* xxiv, 102 (Mayhoff edition, IV, 87-8). The medical portion reads as follows: ". . . a multis in suffitus pro ture adsumitur, in medicamentis vero duplicato pondere eosdem effectus habere quos cinnamum traditur. collectiones minuit et nomas conpescit, inlita ulcera purgat, partus emortuos adposita extrahit et suffita. inlinitur igni sacro et carbunculis cum melle; ex vino pota regio morbo medetur. gallinacii generis pituitas fumo eius herbae sanari tradunt." It is noteworthy that Pliny omitted the classical reference to the use of savin in unguents. This reappears, however in the late medieval handbooks such as Macer Floridus (*cerotis admixta*) and Platearius, along with the Dioscorides-Galen-Pliny material concerning *herba sabina* or *bratheos.*

[7] See above, note 4.

[8] In *De Sanitate Tuenda,* iii, 6 (Kuhn edition, VI, 196) for lassitude he recommended "a non-astringent oil such as *Sabinum*"; in iii, 10 (VI, 220) for skin obstruction, a relaxing oil "such as *Sabinum* in Italy"; in iv, 8 (VI, 286 ff.), see next note; in *De Methodo Medendi,* vi, 2, 3 (X, 392, 405) for wounded sinews, "*oleum Sabinum*"; in viii, 5 (X, 577) for diarrhea, "*oleum Sabinum*"; in xii, 3 (X, 822) for fever with crude humors and stomach trouble, "a relaxing oil such as *Sabinum*"; in xiv, 5 (X, 958), see below note 10. In *De Simplicium Medicamentorum Temperamentis ac Facultatibus,* vi, 5 (XI, 869), in a section concerning "oil from olives," oil "such as Sabine" is recommended highly.

he referred to "Sabine" oil as a "relaxing" or "non-astringent" oil. For instance, in a passage "Concerning an ointment made from seeds of fir and oil" that was recommended "for all types of lassitude," it was suggested that one use "an oil which has a relaxing quality, such as Sabine [oil] in Italy." This was followed by instructions as to macerating the seed in the oil, adding resins, and cooking slowly.[9] In another passage, concerning cancer, Galen wrote that he was accustomed to anoint cancerous ligaments and tendons with "a moderate non-astringent oil, such as Sabine [oil]."[10] This moderate, relaxing, non-astringent oil could not have been oil or juice of savin, which is a powerful local irritant.

Apparently Galen applied the term "Sabine" to various local products; oil, wine, etc.[11] As such, Sabine oil played a comparatively unimportant role in his pharmacopoeia. It is only in an abbreviated version of his treatise on "The Method of Healing," appearing in Latin manuscripts of the early middle ages, that one finds any extended account of *oleum savininum*. We shall consider this presently.

Galen's Greek succesors paid little attention to either oil of savin or Sabine oil. Oribase, as we have already noted, repeated in substance the Dioscorides-Galen material on the herb savin. In Latin versions of his **Σύνοψις**, which circulated in the West at least as early as the sixth century, there was a prescription for an ointment for sinews and muscles which contained both *oleum sabinum* (Sabine olive oil) and *herba sabina* (savin).[12] It is noteworthy that the Greek versions of Oribase make no mention of oil of savin or Sabine oil. Paul of Aegina who lived at Rome and wrote in Greek made very brief mention of the qualities of the herb

[9] *De Sanitate Tuenda*, iv, 8 (Kuhn edition, VI, 286 ff.).

[10] *De Methodo Medendi*, xiv, 5 (Kuhn edition, X, 958). This passage, which is similar to the corresponding sections of the condensed medieval version (Chartres ms. 62, folio 48r), and faintly resembles prescription C of our Fleury treatise, reads as follows: ". . . Oleo tamen principio curationis nec aqua quotidie laborantem omnino partem perfundo. Esto autem id oleum haud quaquam astringens sed plane tenuium partium, cuiusmodi Sabinum est. Incoquimus autem oleo interdum althaeae radicem ac silvestris cucumeris. . . ."

[11] Twice he referred to "Sabine" oil as "in Italy." *De Sanitate Tuenda*, iii, 10; iv, 8 (Kuhn edition, VI, 220, 286). Also see Kuhn, XI, 648 ff. for references to "Sabine" wines.

[12] *Synopsis*, iii, 90 (Bussemaker and Daremberg edition, *Oeuvres d'Oribase*, V, 869). The prescription in question appears in a sixth-century Latin ms. (BN Lat., 10233) originally from the vicinity of Fleury (viz., Chartres). The same prescription also appears, in almost identical form, in a twelfth-century Latin ms. at Brussels (ms. 1342-1350), as a part of an *antidotarium* (edited by Rose in *Theodorus Priscianus, Euporiston*, Leipzig, 1894, pp. 369-70). The same *antidotarium* contains two other references to *oleum sabinum* (Rose edition, p. 372).

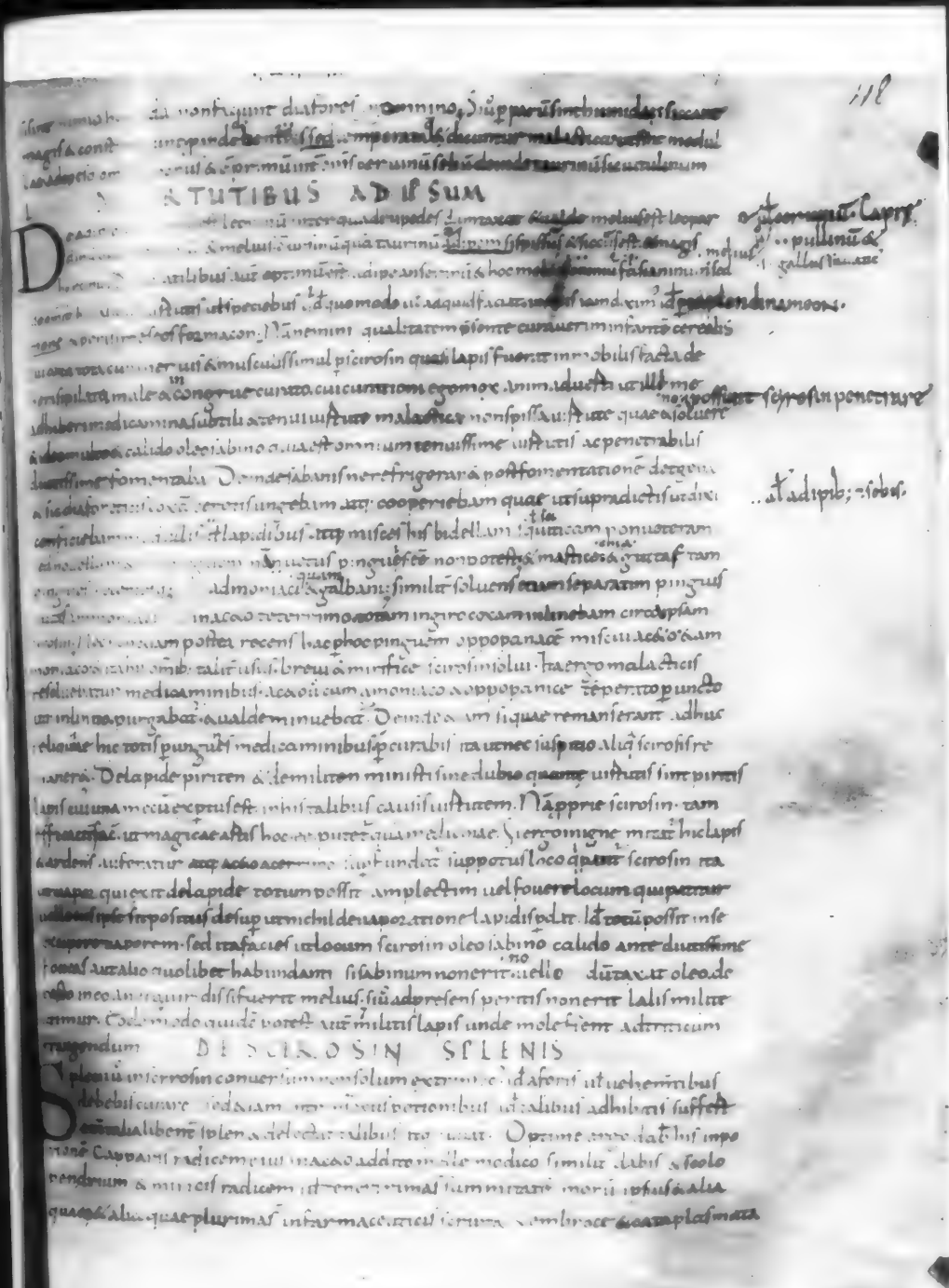


PLATE II. Passages concerning *Oleum Sabinum*, in Galen's *De Methodo Medendi*.
Chartres 62, ca. 1000 A. D., folio 48r.

savin (*βράθυς*),[13] also recommended "Sabine olive oil" as an especially good ingredient for ointments,[14] and gave two recipes for oils in which savin was used.[15] As in the case of Oribase, it is in a condensed Latin version that we find specific references to *oleum sabinum*, not only as an ingredient in an ointment (for headache), but also, by itself, as an ointment (for tremor).[16] In both prescriptions it is probable that *oleum sabinum* was Sabine olive oil rather than oil of savin.

Late classical writers of the Latin West likewise rarely mentioned *oleum sabinum* and when they did, seem to have had in mind Sabine olive oil rather than oil of savin. The fourth-century Latin *Euporiston* of Theodore Priscian made brief reference to *oleo Sabinensi* as an ointment for wounds.[17] A contemporary, Marcellus Empiricus, in his *De Medicamentis*, gave a more detailed treatment of *oleum sabinum*, repeating almost verbatim the Scribonius Largus prescription quoted above.[18] In summary, it seems clear that in classical usage, both Greek and Latin, *oleum sabinum* was Sabine olive oil, and *herba savina* was savin. The term *oleum savininum* was not used.

For about five centuries after Priscian and Marcellus there is no known reference to *oleum savininum* or *sabinum* in Latin medical literature,[19] and *herba savina* (*sabina*) appears seldom. The "Longobard" Latin version of Dioscorides has a chapter concerning *Brathios* (sic) which follows the old tradition, describing the herb without mention of either *oleum* or *savininum* (*sabinum*). The portion of the same treatise that deals with oils is similarly lacking in references to either.[20] The *Herbarius* of Pseudo-Apuleius has a chapter concerning *herba sabina*, based on Pliny, but makes no reference to *oleum savininum*.[21] One of Charles the

[13] *The Seven Books of Paulus Aegineta*, vii, 3 (Adams edition, London, 1847, III, 77).

[14] *Ibid.*, vii, 3 (III, 100).

[15] *Ibid.*, vii, 20 (III, 594, 597).

[16] Paulus Aegineta, *Libri Tertii*, chaps. 38, 73 (Heiberg edition, Leipzig, 1912, pp. 17, 50).

[17] *Euporiston*, i, 21 (Rose edition, p. 69).

[18] *De Medicamentis*, xxv, 2 (Niedermann edition, in *Corpus Medicorum Latinorum*, Leipzig, 1916, V, 187).

[19] This statement does not include Latin mss. of the period (such as that mentioned in note 12) which comprise versions of earlier classical works; e. g., of Galen, Oribase, etc.). Nor does it include Byzantine medical works, with which we are not concerned.

[20] *Dioscorides Longobardus*, book i, *De Confectiones Olcaminum, De Brathios* (Hofmann-Auracher edition, from Munich ms. lat. 337, *Romanische Forschungen*, I (1883), 69-87).

[21] *Pseudo-Apulei Platonici Herbarius*, ch. LXXXVI (Howald-Sigerist edition, *Corpus Medicorum Latinorum*, Leipzig, 1927, IV, 154-5).

Great's formulae for the year 812 mentioned *savina* as one of the herbs grown on his estates, but gave no information with regard to its use.[22] *Oleum savininum* and *sabinum* are conspicuously absent from the medical works of early medieval writers such as Isidore of Seville, the Venerable Bede, Rabanus Maurus and Walafrid Strabo.

The same is true of the anonymous medical compendia of this period. Among the hundreds of prescriptions in the *receptaria* and *antidotaria* which circulated in Western Europe during the early middle ages, there are occasional references to *herba savina* (*sabina*) but I have found no mention of *oleum savininum*, and only one of *oleum sabinum*. This appears in a Latin *antidotarium* (Glasgow, Hunterian ms. T. 4. 13, folio 166) of about the year 800.[23] The passage is almost identical with the [A] portion of our Fleury treatise which was written about a century later in France. The prescription is significant for several reasons: (1) it is our earliest undisputed compounded oil of savin, (2) it describes in definite terms the method of compounding the oil, and (3) it marks a definite medieval divergence from the classical tradition of Sabine oil. In spite of the designation *oleum sabinum*, this is oil of savin, a mixture of oil with wine and savin to form a calefacient ointment. The prescription is so simple and so unlike classical references to *oleum sabinum* that it would seem to have originated in the medieval West. The only hint of classical influence is the warning that the oil should not be used in cases of pregnancy; a reminder of the Dioscorides-Galen emphasis on savin as an abortifacient. It is noteworthy (1) that this portion of the prescription is lacking in the Fleury version, and (2) that the [C] and [D] portions of the Fleury treatise follow the classical tradition of Sabine olive oil, both being epitomes of passages of a Galenic treatise.

In summary, it is evident that in the tenth century the Latin West was familiar, not only with classical Sabine olive oil, but also with a new, non-classical compound, oil of savin. A monk of Fleury, or the compiler from whom he copied, was sufficiently impressed with the importance of these oils to synthesize four pieces of information on the subject into the brief treatise under consideration. One of his sources of information was the primitively medical prescription which we have designated as [A]. Although [A] is similar to the prescription in the manuscript now at Glasgow, textual differences indicate that it was copied from a slightly

[22] *M G H, Legum* (Hannover, 1835) I, 179.

[23] Sigerist edition, *Studien und Texte zur frühmittelalterlichen Rezeptliteratur*, in *Studien zur Geschichte der Medizin*, Leipzig 1923, XIII, 144. Elias Lowe describes the ms. as eighth-ninth century, written in Southern France or Northern Italy.

different version. The source for prescription [B] is unidentified, but since *oleum savininum* is employed therein in a non-classical sense (oil of savin), it also would seem to be of medieval origin. On the other hand, the complicated form of the prescription and the large number of ingredients, suggest the classical tradition. Prescriptions [C] and [D], following the Galenic tradition, were concerned with Sabine olive oil. In fact both were adaptations and condensations of passages from the Latin version of Galen's treatise concerning "The Method of Healing," dedicated to Glauco. Copies of this treatise, in varying arrangements (two, three, and four books) and under somewhat different titles, were in circulation during the ninth and tenth centuries. Inasmuch as there are extant copies at Paris (BN ms. lat. 12958), Monte Cassino (ms. 97), Rome (Vat. Pal. ms. 1088), Glasgow (Hunterian ms. V. 3. 2), and Chartres (ms. 62), it is not unlikely that tenth-century Fleury had a copy which served as the source for prescriptions [C] and [D].

We surmise that the compiler of *Oleum Savininum* was a medical man who emphasized the practical aspects of his profession. He preferred simple, condensed prescriptions such as were to be found in *antidotaria*. He even epitomized moderately long passages from a condensed version of a Galenic treatise. He was not aware of the distinction between Sabine olive oil and oil of savin, incorporating both in his treatise under the curious name, hitherto unknown, *oleum savininum*. The copyist and annotator of the treatise were typically "medieval," in the worst sense of that much abused term. *Savininum* was spelled *salvininum* in one place. *Ignis sacer*, a well known medical term, appeared each time as *ignis acer*. Other technical terms were explained in naive and sometimes incomprehensible fashion. A well known stone, pyrite, was beyond the commentator's understanding, and he referred the reader to lapidaries. Finally, the treatise was copied in a non-medical book, a miscellany of literary works. It was doubtless this fact that contributed to its inconspicuous role in the field of *medica medievalia*. So far as I know, it has received no attention from historians of medicine, past or present.

THE TEXT: Paris BN ms. lat. 6400 B. folios 86v-87r.[24]

[A] Oleum savininum cum facere volueris mittis savinam antepridie electam [i. e., collectam] unciam I S [i. e., unam et semi], oleum libras III, Vinum stipticum (i. e., molle) uncias IV; et in olla rude coquis donec

[24] In the text and translation which follows, parentheses are used to enclose words that appear as *marginalia* or *interlinearia* in the ms. Editorial additions appear in brackets.

vinum siccetur. Ab igne levas et proicis [h]erbam bene colatam. Oleum autem in ampulla mittis et addis ibi savinam mediam unciam. Et uteris ad articulorum dolorem et ubicumque calefieri opus est,[25] est enim calidum nimis et diaforiticum et calidae naturae virtutisque. [B] Oleum savininum ad capitis dolorem emendandum et ad vertiginem tollendum oleum libras III, ederae nigrae (sucum) libram I, agremoniae sucum libram I, sarpulli [i. e., serpylli] sucum libram I, pulei sucum libram I, savinae sucum libram I, aceti libram I; hec omnia coquis in aceto et in olla usque sucus et acetum consumatur et colas et adis pulverem de bacis lauri, mirram, et agitas fortiter et sic reponis in vase uteris cum opus fuerit. [C] Galienus ad Glauconem. Oleum salvininum [sic] omnium tenuissimae virtutis ac penetrabilis cuius virtute curavi te presente[26] infantem Cerealis cui coxa tota cum nervis et musculis per scirosin (scirosis dicitur tumor cum dolore eadem; est et ignis acer) quasi lapis fuerat inmobilis facta, et herisipilata male (herisipila et fage [facte?] dinica [sic] et ignis acer unum est, quod rustice dicitur dratlusclus [i. e., dracunculus]); et congrue curavi cui curacioni ego mox animadverti debere me adhibere medicamina subtili et tenui virtute non spissa virtute quae et solvere valeant (malactica dicuntur que duriciam molliunt et solvuntur), et ideo multo et calido oleo savinino diutissime fomentabam; et ne refrigeraret post fomentacionem detergebam et sic diaforeticis (i. e., calidae naturae) coxam cerotis [i. e., ceratis] ungebam atque cooperiebam; quae conficiebam ex medullis [remainder of line blank] vel adipibus, admiscens (his bidellam squiticam novellam et mastice et amomoniacum et galbanum),[27] et aceto teterrimo totam coxam

[25] As has been indicated above, prescription [A] is the same as the prescription in Glasgow Hunterian ms. T. 4. 13, except for minor textual variations, and except for the insertion in the Glasgow ms., after *opus* est, of the words *prept[er] pregnancia.*

[26] As has been indicated above, prescriptions [C] and [D] were derived from the condensed Latin version of Galen's *De Methodo Medendi.* The late-tenth-century Chartres version (ms. 62, folio 48r) is considerably longer than prescriptions [C] and [D], and has numerous variants. For instance, the Chartres material on *oleum sabinum* (sic) appears in a chapter *De Virtutibus Adipsum* [i. e., *Adipum*], and without apparent connection with the context. It begins "Nam nemini qualitatem presente curaverim infantem cerealis," proceeds thus for four lines, and then intersperses the phrase "omnium tenuissime virtutis ac penetrabilis," with which prescription [C] begins. *Savininum* appears throughout as *Sabinum.*

[27] In Chartres ms. 62 the subject matter of the foregoing marginal additions to the Fleury ms. appears in expanded form, as follows: "atque misces his bidellam squiticam non veteram sed novellam et ideo pinguem non vetus pinguis esse non potest, et mastice et guttas tam pingues recentesque admoniaci et galbani, similiter solvens etiam separatim pinguis gutas ammoniaci." It will be noted that throughout prescriptions [C] and [D], Chartres 62 is similar to the Fleury ms., though the Chartres version is more lengthy, containing numerous phrases of more literary than medical import. Only the more noteworthy of these variations will be mentioned.

in giro inliniebam circa ipsam scirosin; postea recens oppopanace [remainder of line blank] miscui aceto et ammoniaco et breviter et mirifice scirosin solvi.[28] [D] De lapide piriten et militen (nos istos lapides non cognoscimus sed in libris de lapidibus exquirite), meministi sine dubio quante virtutis sint. Piritis lapidis virtutem mecum expertus es in his talibus causis nam proprie scirosin tam efficaciter solvit ut plus magicae artis esse putetur quam medicinae. [remainder of line and page blank][29]

Translation

[A] When you wish to make oil of savin you mix savin that has been collected the previous day, one and one-half unciae; oil, 3 librae; stiptic (i. e., mild) wine 4 unciae; and you cook in a new pot until the wine is dry [i. e., evaporated]. Take from the fire and add the herb, well strained. Put the oil in a vessel and add savin, a half uncia. Use for pain in the joints and wherever a calefacient is needed, for it is very warm and diaphoretic and of a warming nature and effect.

[B] [To make] oil of savin for curing headache and eliminating dizziness, [take] oil, 3 librae; juice of black ivy, 1 libra; juice of argemony, 1 libra; juice of creeping thyme, 1 libra; juice of fleabane, 1 libra; juice of savin, 1 libra; vinegar, 1 libra. You cook all this in the vinegar in a pot till the juice and vinegar are absorbed; and you strain [it] and you add powdered bay berries and myrrh, and stir violently, and put it back in the vessel and use as needed.

[C] Galen to Glauco. Sabine [olive] oil[30] is the thinnest of oils, and

[28] Chartres ms. 62 contains additional material immediately after *scirosin solvi*; viz., "Ita ergo malacticis resolvebatur medicaminibus; aceto vero cum amoniaco et oppopanice temperato peruncto atque inlinito purgabatur; et valde minuebatur. Deinde etiam si quae remanserant adhuc reliquiae hic totis perungues medicaminibus; percurabis ita ut nec suspitio aliqua scirosis remaneret."

[29] Chartres ms. 62 contains additional material, as follows, immediately after *quam medicinae*: "Si ergo in igne mitatur hic lapis et ardens auferatur atque aceto acerrimo superfundatur suppotus [i. e., superpotus] loco qui patitur scirosin, ita ut vapor qui exit de lapide totum possit amplectim vel fovere locum qui patitur vel locus ipse sit positus desuper ut nichil de vaporatione lapidis perdat. Idem totum possit in se excipere vaporem; sed ita facies ut locum scirosin oleo sabino calido ante diutissime foveas, aut alio quolibet habundanti si sabinum non erit, novello dumtaxat oleo, decocto in eo aneto, viridis si fuerit melius, si vero adpresens peritis non erit lalis [i. e., lapis] milite utimur. Eodem modo quidem potest autem militis lapis unde molefiunt ad triticum frangendum. [end of chapter].

[30] Throughout prescriptions C and D, I have translated *oleum savininum* in the Galenic sense of the word, Sabine [olive] oil. In the Chartres ms. the spelling is *sabinum*,

of penetrating power; by virtue of which, in your presence, I cured the child of Cerealis whose whole hip, including the sinews and muscles, had become immovable like stone because of cancer (cancer is said to be tumor with pain; the same is also sacred fire). It was also badly erysipelated (erysipelated and made red[31] and [similar to] sacred fire, all in one, is what is vulgarly known as little dragon).[32] I cured it neatly, and for this cure I soon learned that I ought to apply medicines of a subtile, delicate and light property, which have solvent qualities (malactics are said to be those which soften and dissolve hardness). I fomented it for a very long time with much hot Sabine [olive] oil and lest it become cold again after fomentation, I wiped it off and thus with diaphoretic wax salve (i. e., of warm nature) I anointed and covered the hip joint. This [salve] I compounded from marrows or fats, mixing (with these new Palmyra palm and mastic and ammoniacum and galbanum). With sourest vinegar I smeared the whole hipjoint in a circle around the cancer. Shortly afterwards I mixed ginseng with vinegar and ammoniacum and quickly and marvelously dissolved the cancer.

[D] Concerning pyrite stone and milite (we do not know these stones; consult the books concerning stones),[33] doubtless you remember of what value they are. The value of pyrite stone you have tested with me in such cases as these, for by its own nature it dissolves cancer so effectively that it is thought to belong more to magic art than medicine. [Chartres ms. 62 continues concerning pyrite, as follows: Now if this stone is placed in fire and is taken out while glowing and submerged in acrid vinegar and placed over the part affected with cancer so that the vapor which exudes from the stone can cover and foment the entire part affected, or if the part itself is put above so that none of the vapor from the stone is lost, it will

and in both mss. the context indicates a moderate warming oil such as olive oil, and not the acrid, irritating oil of savin.

[31] In the text the words translated "made red" are *fage* [*facte*]*dinica*. The etymology of *dinica* is a mystery, but it seems clear that the reference is similar to that in Celsus, *De Medicina*, v, 26, 31, where erysipelas is defined as a species of cancer with red or black inflamation which is painful and becomes corrupted as in "sacred fire."

[32] *Dracunculus*, in Galenic times, the Middle Ages, and more recently in eastern lands, has been applied to a disease caused by a fine subcutaneous worm (medina worm). See Galen's references to it (Kuhn edition, VIII, 393; XIX, 449); also Du Cange, *Glossarium*, sub *dracunculus*.

[33] The stones, especially pyrite, were known in both ancient and medieval times, and in both lapidary books and medical works. For instance, the Galenic alphabet of simples in Chartres ms. 62, folio 64 v lists both *lapis piritis* and *lapis militinis* with their medical uses, but with no reference to cancer. See also next note.

be able to absorb all the vapor. But you will arrange so that, for a very long time beforehand, you foment the cancerous part with warm Sabine [olive] oil, or any that is available if there is no Sabine [oil], just so it is new oil cooked in dill, green preferably, if there is any. If, however, pyrite stone is not available, use milite. In the same manner, it is possible to use milite stone whence mill stones are made for grinding grain].[84]

[84] Pliny, *Naturalis Historiae*, xxxvi, 137, 140 (Mayhoff edition, V, 356-8) presented the lore of the ancient world on pyrite and milite. Pyrite appears in medieval treatises such as Isidore's *Etymologies* (xvi, 4, 5), and the lapidaries; milite is conspicuously lacking.

THE CIVIL ADMINISTRATOR—MOST SUCCESSFUL PHYSICIAN[1]

BY

JOHANN PETER FRANK

A Dissertation Written in 1784 and Delivered at Göttingen as an Inaugural Address by Johann Lukianovitz Danilevsky.

TRANSLATED FROM THE LATIN WITH AN INTRODUCTION BY

JEAN CAPTAIN SABINE

INTRODUCTION

Johann Peter Frank (1745–1821) was an advocate of the philosophy of the benevolent despot, and particularly of its vigorous application to problems of public health. Early in his career he took upon himself the task of formulating an integrated system of public health administration, and during his lifetime produced his influential *Medicinische Polizey*[2] in six volumes with three supplementary volumes. The significance of this work lies not so much in originality of concept as in the fact that it presented in the vernacular, for the layman, a comprehensive treatise with an historical analysis of the problems and detailed specific recommendations for all matters pertaining to the health of a nation. Interest in hygiene and public health was greatly increased during the eighteenth century. The term "*medicinische Polizey*" was already in use, and writings on problems of public health were published both in monographs and in medical journals[3] but nothing had appeared which compared in scope or constructive character with Frank's work.

[1] Ioh. Lukianovitz Danilevsky, *Kiova-Russi: Dissertatio de Magistratu, Medico felicissimo.* Goettingae 1784. (reprinted in: *Delectus opusculorum medicorum antehac in Germaniae diversis academiis editorum, quae in auditorum commodum collegit, et cum notis hinc inde aucta recudi curavit,* Johannes Petrus Frank; Ticini, 1788, Vol. V, pp. 70-120.) References exist to the dissertation published in quarto form. (See notes 6 and 7.) The present translation was made from the above-cited reprint, a copy of which is in the Army Medical Library, and photostats of which are at the Institute of the History of Medicine, The Johns Hopkins University.

[2] Johann Peter Frank: *System einer vollständigen medicinischen Polizey.* Published from 1779 to 1827 by various publishers. For circumstances of publication, see the detailed account of Baumgartner and Ramsey: *Annals of Medical History,* Vol. 5, pp. 525-532; Vol. 6, pp. 69-90, 1933.

[3] For these points, and for the development of interest in public health, and for discussion of Frank's work, see Fischer, Alfons: *Geschichte des deutschen Gesundheitswesens.* Vol. 2. Berlin 1933.

Frank seems, to the modern reader, to reckon very lightly with the difficulties of forcing beneficial measures on people. Very little is said about the enlightenment of the people, in comparison with the high incidence of such phrases as "ordinances must be passed" and "it must be forbidden by law." And the reader, at least in a democratic country, is likely to bristle at the emphasis on the value of the citizen to the state and the benefit which the state will derive from keeping him healthy and prolific of progeny. Since Frank was appealing to the rulers, it was undoubtedly expedient to stress the benefits to the state rather than the purely altruistic considerations, but it is difficult to find any passages in which Frank clearly values the individual for his own sake, although a scattering of such a sentiment would scarcely have detracted from the effectiveness of the writings if Frank had wished to include it.

From 1775 to 1784 Frank was personal physician to the Bishop of Speyer, and during this time he wrote the first three volumes of his *Medicinische Polizey*. The first volume was the occasion of a serious altercation with the Bishop, and aroused severe criticism from both clergy and nobility, because of the attacks on practices of the Church and because of the many social reforms which were recommended.[4] A threatened break with the Bishop was averted, on terms favorable to Frank, and he remained in the service of the Bishop until 1784, when he received invitations from the universities of Pavia, Mainz and Göttingen. He accepted the chair of Professor of Clinical Medicine at Göttingen, where he remained for only a year, leaving for Pavia to replace Tissot. During Frank's year at Göttingen the *Dissertatio de Magistratu, Medico felicissimo* appeared (hereafter to be referred to as the *de Magistratu*). This is, to the present writer's knowledge, the only address in which Frank sets forth in oratory the defense of the *Medicinische Polizey*. In a later address, which has been translated by Dr. Sigerist,[5] Frank refers to the *de Magistratu* as a discussion of the effectiveness of wise legislation in protecting the people from those evils which are beyond the control of the physician, and gives no other such reference.

The *de Magistratu* is sometimes given as a separate bibliographic reference. It is listed in Frank's autobiography with the remark: ". . . schrieb ich unter fremdem Namen folgende Inaugural-Dissertation: Joh. Lukianovitz Danielevsky Dissert. inaug. de Magistratu, medico felicissimo.

[4] Doll, K.: *Dr. Johann Peter Frank 1745-1821. Ein Lebensbild.* Karlsruhe, 1909.

[5] Sigerist, H. E.: The People's Misery: Mother of Diseases. *Bulletin of the History of Medicine*, 1941, Vol. 9, pp. 81-100.

Göttingae 1784. 4to."[6] It was reprinted in *Delectus Opusculorum.*[7] A footnote to the title of the *de Magistratu* as it appears in this collection contains the statement that the address was written (*conscripsi*) "*sub alieno nomine.*" The translation of this phrase is determined by the existence or non-existence of a person named Danilevsky (or Danielewsky, etc.). A passage in Trzebinski, written by Joseph Frank, establishes the identity of Danilevsky as a student of Frank's, who delivered this dissertation on the occasion of receiving his medical degree. In listing the duties which fell upon his father, Joseph Frank writes:

". . . enfin les dissertations inaugurales que les professeurs écrivaient pour les élèves qui s'addressaient à eux, moyennant une rémunération de quartre à six louis d'or. Mon père n'en écrivit qu'une (****) . . .
(****) Joh. Lukianowitz Danielewsky. Diss. inaug. de Magistratu medico felicissimo. Goetting. 1784. 4°."[7]

Callesen supports this by giving Danilevsky as the author of *de Magistratu* and a graduate in medicine at Göttingen in 1784.

The thesis of the *de Magistratu* is that the government could accomplish a great deal which is beyond the powers of the medical profession if it would undertake to act in a medical capacity. Most of the subject matter is from the first three volumes of the *Medicinische Polizey*, which precede it in time, but the problems of medical education and the qualifications of physicians, epidemics, infectious diseases and the control of rabies are all treated mainly in the later volumes. Not all of the subdivisions of the fields of the first three volumes are touched upon, but the major subjects of these volumes form the basis of the *de Magistratu*. As in the *Medicinische Polizey*, there are many citations and references, and these are usually to facts rather than to authorities in support of Frank's views. Many problems which are essentially social are attacked, ranging from the evils of the dissolute life in the army to those of the celibate life in the Church. Frank was born a Catholic, and in the introduction to the first edition of the *Medicinische Polizey*, written in 1778, he proclaims his submission to the Church and rescinds in advance any passages which may prove unacceptable to its authorities.[8] But in the first volume he proceeds to a long and unveiled denunciation of various practices. Al-

[6] *Biographie des Johann Peter Frank, von ihm selbst geschrieben.* Wien, 1802, p. 91.
[7] Trzebinski, S.: *Séjour de Jean-Pierre Frank à Goettingue. Chapitre X des Mémoires de Jean-Pierre et Joseph Frank, rédigés par ce dernier. (Manuscrit de la Société de Médecine de Wilno, n. p. et n. d.)*
[8] Frank, J. P.: *System einer vollständigen medicinischen Polizey.* (Second Edition) Frankenthal, 1791, Vol. 1, p. 24. (Introduction to first edition is reprinted here.)

though harsh criticism met this writing, the *de Magistratu*, appearing six years later from protestant Göttingen, contains a diatribe against the celibacy of the clergy and castration for ecclesiastical purposes, and another against the treatment of disease by exorcism and the impairment of mental health by too violent haranguing about eternal damnation. Many other examples can be found in the text which illustrate Frank's fearless outspokenness.

The *de Magistratu* is written in the highly oratorical style which was the fashion of the day. It abounds in figures of speech, apostrophes, and incomplete exclamatory sentences. For the most part the meaning is clear, but it has been necessary to paraphrase some passages rather freely in order to produce coherent English.

The word *magistratus* has been consistently translated "civil administrator" or, when a plural form was used, "civil authorities." *Principes* has been translated "rulers," and *respublica*, "state." The footnotes of the text are all Frank's, and are given unchanged except for the correction of very obvious errors and the omission of such literary mannerisms as the prefixing of "*Ill.*," "*Beatus*," etc., to the names of individuals. In a few places very minor amendments to the text were necessary, but these were to remedy what were obviously copyists' or printers' errors involving a single letter. It has not seemed worthwhile to indicate these in the absence of the Latin text.

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IOH. LUKIANOVITZ DANILEVSKY: OF KIEV, RUSSIA DISSERTATION ON THE CIVIL ADMINISTRATOR—MOST SUCCESSFUL PHYSICIAN, GÖTTINGEN, 1784*

I.

The principal objective of the medical art is commonly designated as the restoration of health after it has been lost. This would certainly be secondary if the ears of mortals in flourishing health were as eagerly open to the advice of physicians as the mouths of the sick usually are for medicines, when it is too late. I scarcely know of a profession in which the practitioners put forth so much effort toward averting the malfunction of the mechanism concerned, as is proved on the part of physicians by the number of books written on the prevention of disease; and this does no dishonor to Aesculapius, while unjust popular opinion holds that a physician's entire profit comes from disease. But most regrettably, however much we point out the dangers of indulgence and high living, we sing to the deaf, who apparently prefer to be ill so that they may be cured of diseases by a divine art rather than protect themselves against these with the aid of human counsel.

II.

Therefore everybody honors the physician, not for the prevention of disease, but for deliverance from it. Yet (by the gods!) they are not sincere about this, for the minds of most of them are concerned not so much with considerations of health itself as with a certain display, a desire to have a physician standing at their bedsides when they are about to die, or to have one at their sides while they still enjoy active life just as the

* I wrote this dissertation under the name of another person, while I still lived in Göttingen. It was the design of the writer to show what the civil administrator could do for the health of cities and nations if he would undertake to act in a medical capacity. I should think that what the civil authorities could do is of far greater weight than what the medical profession itself has ever offered or will ever be in a position to offer toward this most worthy end. For medicine has always been more successful in the prevention than in the cure of disease, and whatever benefit the physician brings to the individual citizen here and there, the civil administrator takes upon himself to accomplish for the entire population. I have believed it worthwhile to convince everyone of this truth and in a special address to speak at greater length upon the merit of medical administration and its indispensability for every state.

aristocrats of the country commonly maintain among their servants an Ethiopian for the sake of ostentation. Surely, like clergymen, physicians are merely part of the luxurious furnishings of the rooms of these people, and since their advice is very rarely heeded, they could presently be dispensed with, whenever the rulers wished to be self-sufficient and preferred to be rid of all kinds of parasitic servants.

III.

So the advice of those very wise abhorrers of the medical brotherhood does not seem to have been so poor when they demanded the exclusion from the state of the practitioners of the healing art (as the ancient Romans are said to have done to the philosophers not without beneficial result) and promised that a state without physicians would be, if not greatly improved in health, at least more secure in general.[10]

Let those who wish to judge in this matter ask the profession itself how many thousands of persons are slaughtered annually by inexperienced physicians. Let them weigh the evidence and see how small is the number of those who thoroughly understand the principles of the art which they profess and whose insignia they wear, and who in their practices, with their almost daily indulgence in idle talk, do not act as the best and most active agents of Pluto on earth. And they will be forced to admit that the medical men for the most part, either through some fault other than their own are useless to the citizens, or through their own fault are a detriment to the state.[11]

IV.

Until such time as the states learn to make proper use of the physicians, and the physicians learn to recognize the dignity of their art, how can the civil administrator look unmoved upon the terrible devastation to be found among the people, the universally increased mortality and the day-by-day deterioration of the constitutions of human beings, without making at last some attempt to fight the vicious serpent and come to the rescue with some remedy? Does not the captain himself take the helm when a ship is beleaguered by storms through Neptune's anger and the helmsman is ill? And as long as the influence of the physicians is so small among the healthy and vigorous citizens, is there not a need for paternal guidance in these matters on the part of the civil administrator, who maintains order

[10] Jean Jacques Rousseau: *Emile, ou traité de l'éducation. I. Part.*

[11] I. E. Gilibert: *L'Anarchie médicinale, ou la médecine considerée comme nuisible à la Société.*

in the state, security and public welfare, through the promotion of the bearing of healthy children, the direction of the physical training of children, the reinforcement of the strength of worthy citizens, and finally the averting, destroying and repressing of ills which threaten the body from external causes?

V.

Indeed, these conclusions appear to be placed beyond all possibility of doubt. Yet how many things are not assailed by doubts? And since the skeptics enjoy the not entirely blameworthy privilege of demanding theoretical reasons for things confirmed by experience, and of considering these, according to their own ingenuity, now in this aspect, now in that, and of bringing their judgment to bear on these matters; and since they assume that there is no need for them to prove by experience anything which they claim to have proved by theoretical argument, it is not to be wondered at that they have also resented the government's concerning itself with the public welfare, and have brought forth various arguments in support of their thesis.

They complain that all liberty will finally be taken away from the citizens and transferred to the government. They believe that the rights of the individual are encroached upon if each citizen is not permitted to manage his own affairs or even to neglect them. They assert that by no means, not even by stronger measures, can all of the carelessness of the citizens be eliminated, and they suggest that a better effort be made first of all to educate the people, whereby at last the real root and the immediate cause of the evil can be done away with.[12]

VI.

These arguments will seem to prove too much to anyone who reflects that the origin and basis of the laws of a country do not always rest with the victorious military leader, but in very many nations rest in the will of the people itself, because they have come to recognize the need for good laws. And if the rulers seem to have extended unduly the authority over the people given to them by the disorders of the times, I am inclined to believe that this has been done because like parents they were over-anxious for the welfare of their children, so that they restricted the so-to-speak childlike people by laws to those things to which natural impulses or the use of simple reasoning would at last of itself have driven them.

[12] *Untersuchung der vermeinten Nothwendigkeit eines authorisirten Collegii medici und einer medicinischen Zwangordnung.* Hamb. 1781.

Do not the laws themselves abundantly demonstrate the dangers of infraction? . . . Or if some objection could be made to the very great number of laws, do not nations too have their infancy, during which they ought to become accustomed to good laws; so as to be emancipated again when finally in the estate of manhood they will do those things habitually which were sanctified by law for them as children?

Certainly no one will disapprove of committing to custody the mentally unbalanced, lest they do violence to the healthy or throw themselves from windows into rivers. But have we not known nations to be seized by madness? If anybody says that nations ought not to be bound by law, ought not he himself then to be bound by a chain?

Just try to educate a madman! Or to move a gluttonous people with arguments about diet! Do not daily experience and all of one's senses cry loudly enough that intemperance is an evil and a menace to the country? Yet you will see drunken today a man whose excesses of yesterday had afflicted him with a violent headache. Nor do the bodies of men dead from drinking wine polluted with lead serve to frighten off a madman, even though the poisoned wine is poured out by order of the ruler under the gallows.[18]

VII.

Further arguments do not seem to be necessary to convince any person who is free from preconceived opinions, of the necessity for laws concerning public health. Well then, I shall now explain briefly how the civil administrator is the most successful physician. And by this analysis it will be made clear what it is that nations can promise themselves from sounder public laws.

VIII.

Those who understand the importance of manual work for amassing and protecting wealth, measure correctly the prestige of a country by the increased number of healthy citizens fitted for undertaking all kinds of work. On this account the laws are framed particularly to favor the hoped-for increase in population, and no great difficulties would check the effectiveness of these laws (since Nature herself provides so powerful a stimulus toward this end), unless there were obstacles arising everywhere from the pernicious and daily increasing debauchery of the people.

[18] Baldinger, *Arzneien, eine physicalisch-medicinische Monatschrift.*—Frank: *Medicinisch. Polis.* III. Band. S. 507. &

and unless wars snatched away so many robust youths from the arms of their sweethearts, and unless fatal steel in the hands of the clergy deprived an appreciable number of the healthiest young men of many European countries of their virility—not because most of these are anxious to accept the honor of ecclesiastic surgery, or its reign contrary to Nature, but alas! because out of all the uncultivated fertile fields in the country they are not permitted to select any to cultivate except ones which they know have already been assigned to another plough or which are sterile and less favored for the production of crops. It pleased the Council of Trent to declare celibacy superior to marriage. (It seems to me that the Fathers—decrepit as they were—had reason for holding this view!) And behold so many flourishing youths stolen from the country, who almost certainly at the cost of their health submit to the sacred knife, or else battle unsuccessfully against victorious Nature,[14] or demonstrate as living examples that different laws are imposed upon young men by Nature and the forces of human society from those which Rome elicited from the Fathers in Council.

Of what avail is the soundest advice of physicians among the incautious who vow chastity; of what value the power of the most famous aphrodisiacs among the unfortunate martyrs to their own vows, unless the rights of Nature are restored by the rulers and more heed is paid to the well-being of the state[15] than to the pronouncements of old men? How many ailments has not the kindness of the Emperor toward mankind put to flight because of the breaking down of the iron gates of the cloisters of the Vestal Virgins, ills for the eradication of which the entire chorus of the medical profession had been inadequate? And how many ailments would not be cured by the opening of the virgin uterus and the granting of freedom to the Brothers to discard their vows?

[14] *Dringende Vorstellungen an Menschlichkeit und Vernunft um Aufhebung des chelosen Standes der catholischen Geistlichkeit.* S. 184. 227.

[15] P. C. von Hohenthal. *lib. de Politia* p. 18, says: "The diligent study of history teaches, daily experience shows, and the nature of public affairs demonstrates that the number or plentifulness of the population is conducive to a high standard of public welfare, i. e., to the conservation and strengthening of the state; and no one will question, who has given enough attention to the understanding of history, by what means states gradually rise to power. How much care among the ancients must the Athenians have devoted to the increase of the number of citizens! How much the Romans!" This end the Emperor Justinian too had in mind. He says (*novella* CXL) "Nothing is to be revered in human affairs as highly as matrimony: since from it children and the entire subsequent series of generations arise, and since it makes provinces and cities populous; and from this is finally built the solidarity of the best state."

IX.

The leaders of the states work to introduce and increase everywhere plentiful supplies of the best fruitbearing trees of all kinds. And experience teaches that this procedure is not without great profit, economic as well as medical. They are kept busy rejuvenating the strains of domestic animals with foreign and more excellent blood, correcting the physique and increasing the beauty of horses and other beasts of burden, and at no small expense improving them by the introduction of superior hereditary strains. We are amazed at how much human industry can accomplish in these respects and in how short a time it can be done. While nearly all rulers are engrossed in these affairs, how much they contradict themselves when they completely neglect the cultivation of the human race! Although they see that defects of other animals can be so readily corrected by new hereditary strains, they not only deprive their citizens of this great benefit, but actually hinder them by laws against it. There are rulers who, while they know that only a few thousands of subjects are under their jurisdiction, nevertheless have numerous military forces, selecting these annually from the most robust and physically superior youths, and as if a king were about to attack and overthrow their reign, they exercise them strenuously in arms during the springtime. For the remaining portion of the year they confine the armed youths to the cities, where the latter lead a most idle life, consequently abandoning themselves to all kinds of debauchery and excessive drinking. And these youths are compelled to pass a large part of their captivity in hospitals now to be exercised by physicians and surgeons. And the sad outcome shows what the prowess of the medical profession accomplishes with them. To wit, when these unfortunate men have passed six years or more in this way, they are then returned to the family hearth, men most dissolute in their habits, their power broken not by Mars but by Mercury, their blood infected and their nerves shattered. Free at last to enter into matrimony, they marry either maidens already advanced in age or those whom the group of feebler men ineligible for military life has left to them, either because of the physical unattractiveness of these girls or for other physical or moral reasons. They marry them nonetheless, and soon they infect their wives with their detestible disease, or they procreate a debilitated progeny, deprived of energetic strength and destined either to die soon after birth or to increase the number of enfeebled citizens and the physical and moral debilitation of the human race.

Prescribe drugs, physicians; abolish the diseases of parents transmitted to children; and save in the end a few citizens for a longer time for the state. But how the rulers could distinguish themselves if they were willing to lend their ears to the truth and to eradicate the causes of evil! Would not the same law which holds among farriers be most effective in improving the progeny of the citizens and correcting the blemishes of nations, effective on a scale never to be equaled by any medicine whatever? Therefore let them leave to kings the dreary apparatus of war and let them preserve their more handsome young men for their family fields, and allow them to think about producing a sturdy race. Let them modify their ancestral blood with other and therefore more desirable blood, nor yet easily permit marriage among relatives, of whom almost an entire region is often composed, or at all events prevent marriage among close relatives. For they see that fields sown year after year to the same crop do not appear to bear as hoped, nor do other animals have brothers mated with their own sisters or half-sisters without harmful results.[16]

X.

Birth is more difficult for man because of the shape and large size of the head, and many are the dangers to the mother from this. For this reason parturient women in the most ancient times wished women who had borne children more often to help them,[17] and they were accustomed to hold midwives in high esteem. Since the Greeks regarded the hands of physicians as being like those of the gods, they considered it the most honorable form of address for a woman of advanced age if they greeted her as "**Μαῖα**" as if it were a distinguished title.[18] The midwives, indeed, they often greeted as "**Εἰλείθυια,**" as if they were the daughters of Juno-Lucina[19] who was believed to be the goddess of childbirth.[20] But while in these hands normal delivery often proceeds fairly satisfactorily,

[16] Buffon, *allgemeine Histoire der Natur.* II. Th. 2. Band.

[17] Socrates, in a very beautiful allegory, which he used in instructing Theaetetus, and of which the *Deutsches Museum* provided, in 1778, an elegant version in the German language, 9tes Stück. S. 214., speaks as follows: "Don't you know, Theaetetus, that no midwife helps others in childbirth as long as she herself is still capable of conceiving and bearing children; but only such women serve in this capacity as can no longer have children? But Diana does not allow the childless to act as midwives; since human nature is too weak to be able to practice an art concerning which it has not itself had experience, etc." (quotation from the German.)

[18] Hesychius, *s. v. μαία.* Homer Odys. V. v. 482.

[19] Spanheim in *Callim. Hymn. in Iov.* v. 12.

[20] Terence. *Andr.* Act. III. Sc. I. v. 15.

how many difficulties must have arisen each year from all unfavorable presentations of the fetus! To be sure, antiquity had its male obstetricians too[21] and its gods of childbirth, but the severe laws to which the weaker sex were subjected among so many nations, scarcely gave a place to the ministrations of these men.[22] D. Nortangel reports that the first male obstetrician of Hamburg was burned at the stake.[23] Indeed, the first male obstetricians of the Duchy of Württemberg were shepherds who devoted themselves to public service and possessed their instruments until in the year 1578 they were removed from this office.[24] Consideration of this fact at any rate seems to indicate that the physicians of Germany did not enter this field of practice before the time when the women of Germany at last imitated the less backward women of France. These men—to whom humanity owes much, and among whom I should name with praise the distinguished elder Wrisberg—soon appreciably developed an almost new art which now constitutes a part of medical science almost complete and equipped with the most definite rules.

Let them complete the most difficult deliveries, Lucina favoring them; and let them preserve as many of the progeny of the state as possible. But what do these amount to, I ask you, compared with those whom midwives with their unskilled hands normally slaughter daily in every badly regulated state? And how many babies have not good rulers saved as soon as they have seen to it that these midwives are trained more completely, and as soon as they have begun thus to eradicate the root of these misfortunes which grow from crass ignorance of the midwives and their incredible audacity?[25] What noble undertakings await you, O rulers, if

[21] From the absence of a name for male obstetricians in the older languages, the contention that the ancients did not countenance any activity by men in this field, and that such had not appeared in France until the present century, is made by the author of the book, "*de l'Indécence aux hommes d'accoucher les femmes.*" Trevoux. 1744. p. 2, 10. & *Bayl. Dictionnaire.*

[22] In childbirth the evidence of women is enough, since, for reasons of decency, no man is admitted to the delivery. *Digest. L. I.* art. 10. § *de ventre inspiciendo.*

[23] See *deutsches Museum* 1778. 2. Stück. Because of a crime committed, or because of his profession?

[24] *Wegen ihrer Unbarmhersigkeit und groben Instrumenten auch um christlicher Zucht Willen. Nachrichten von den Gesetzen des Herzogthums Wittenberg.*

[25] Langguth enumerates the three most influential causes of the neglect of obstetrics. The first is that rulers, who could establish or maintain institutions of this kind, do not properly know the very sad state of affairs, with the innumerable ills which emanate from it; or, indeed, they do not know it so clearly that, letting themselves down from that high position which they occupy to the miserable level of the lowest classes, they may be sufficiently moved by the seriousness and atrociousness of conditions. The second

you will recognize the value of a numerous and healthy population, and if it pleases you at last to turn your efforts to a conservation of those riches which are present rather than to the pursuit of uncertain ones!

XI.

It is much to be desired that the progeny born to a country be preserved healthy and vigorous, and to this end indeed the efforts of physicians have already been very successful. How much all good men owe to the blessed memory of Rosenius and to the famous Murray who translated his treatise on the diseases of childhood into the German language and made excellent additions to it! But what tremendous mortality has been caused up to now by the neglect of mothers and the impious frauds of wet-nurses, and the inexcusable carelessness of physicians themselves in dealing with diseases of childhood! Experience testifies to the happy use of the veterinarian's art in the state; tireless men have learned how to treat the diseases of cattle, to the great profit of the citizens. On the other hand—a shameful fact!—there are physicians not few in number who, when called for the little ones, remain unmoved by the wailings of these who cannot speak, and only prescribe whatever remedies come first to mind for the sake of appearance and without any recognition of the causes. If all these affairs were a concern of the civil authorities, how many citizens would be rescued from disaster in a short time, and how greatly would the administrator increase his resources if he paid greater attention to the very young, and considered attentively the terrible mortality of infancy, and inquired at greater length into its avoidable causes! Whom has the benefit of inoculation failed to save, and the method of treating natural smallpox improved from this? How many children the example of the great Empress Catherine II has rescued from the jaws of death when the parents, following the example of the Mother of the country, chose to give their children a milder disease rather than await the pestilence, in which the art of the physician nowhere nearly rivals the success of inoculation!

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is that those who are not ignorant of the evil either cannot find a way and means of bringing aid or, distracted by other affairs, turn their attention elsewhere. Thirdly, it is because either the costs necessary to institutions of this kind seem too great, or it is not known where the funds are to be sought. Christ. Aug. Langguth, *Prolusio de cura, qua Respublica prosequi debeat rem obstetriciam.* Wittenberg. 1782. p. 5. The very learned author could have added a fourth reason: because the expenditures for love affairs, the hunt, horses and the theater preclude all expenditures upon a less enticing matter.

XII.

All physicians deplore the increase in the catalogue of diseases resulting from the premature sexual life of young men and the sensibility of the weaker sex sharpened by reading very frivolous books which are too stimulating to the power of the imagination, and from a pattern of life which is contrary to health, all exercise having been abandoned, and which is devoted only to the cultivation of the faculties of the mind. They deplore the fact that the most efficacious measures of the art do not more adequately suffice to cut off fast enough the constantly regenerating stings of the deadly serpent. They enumerate in vain the causes of the evil, and with useless clamoring urge young women back to the precept of life of sensible mothers of former times who were more accustomed to manual labor. The multitude of most serious evils has sensibly increased, and therefore they easily foresee the greatest misery for a people born of these women, a misery by which, on account of an already weakened constitution, we are disposed not only to major chronic illnesses and incurable diseases,[26] but even more to general depression and incredibly through deterioration of the mind.[27]

As Susmilch has already observed in London, although on the one hand the number of those who used to die of alcoholism has somewhat decreased, on the other hand the frequency of suicide has increased so much that, while around 1690 among 10,000 deaths less than 10 were found who had slain themselves, about the year 1756 the number of suicides had increased by nearly fifty percent.[28] At the same rate this evil creeps forward in other regions also, so that now in France and in Germany as well in various provinces the frequency of suicide increases yearly. And in fact it seems that the cause of this deplorable occurrence must be sought in an excessive sensitivity of the nervous system, to create which the many errors of youth, the abuses of sex, especially the practice of detestable habits of

[26] The famous Grant reports from his own observations that apoplexy, paralysis and arthritis are daily increasing in England, in proportion to the luxurious living in that kingdom, and are becoming more plentiful and frequent in Ireland, Flanders, Holland and Normandy as well. *Beobachtungen über die chronischen Krankheiten.* p. 9.

[27] Arnold reports that instances of melancholy and mania are so increased in England in our times, that the incidence of these diseases is clearly not comparable with that of earlier times. *Observations on the nature, kinds and prevention of Insanity.* Vol. I. pag. 27.

[28] *Göttliche Ordnung in den Veränderungen des menschlichen Geschlechts.* I. B. S. 549. 3e. Edit. —

onanism,[29] and all other kinds of indulgences abundantly suffice.[30] Well then, if the warnings of physicians are brought forward to no avail, will not the authority of the civil administrator be beneficial in such great troubles, if greater care is taken for the public education and for the habits of youth? Indeed unless in childhood the body is strengthened and the nerves made vigorous by gymnastic games, the mind is generally incapable of bearing the more serious misfortunes which come in adult life. Even when country people trained by their mode of living, or wealthier people, as soon as they withdraw themselves from strenuous work, usually fall into hypochondria, so that in a rich canton in Switzerland not a single home remains in which someone, either by a rope or by some other violent means, has not brought an end to his own life.[31]

It is certainly not to be doubted that, if the citizens continue thus to manage the education of women, if they go on softening the minds of youth by the assiduous reading of books which, as it were, shatter the intellect,[32] and to offer to immature lips all manner of indulgences to be enjoyed, at length the entire country will be suffering from so-called "spleen," which severe affliction already besets the minds of the citizens to a remarkable extent even in France—a race formerly accustomed to bear the greatest calamities with a light heart, and which now, as if deteriorated, presents so many cases of suicide. Vices are markedly increased by corrupt training; the health is lost and the mind led to desperation through the pangs of conscience,[33] and, which is not least, the enormous cost of things, and the urge to accumulate possessions

[29] See Tissot *de l'Onanie*.

[30] They are greatly in error who attempt to judge the act of suicides on a basis of things which they find present in the cadaver contrary to nature or which they find entirely absent. For who among physicians will deny that men can often be affected by the obstructions which are so often found apart from melancholia, not necessarily as sequelae of that mental disorder, nor can the slightest deviation from the normal constitution be detected by us in the very precise fabric of the body, especially of the nervous system? Cf. in regard to this, I. M. Winter. *Quaestio medico legalis: An sectio anatomica in cadaveribus de Aurochiria suspectis.* Heidelb. 1776. See *Delect. Opusc. Med.* Vol. I., where I have had this dissertation reprinted. Also Ern. Gottl. Bose, *de morbis mentis delicta excusantibus.* Lips. 1774. &c.

[31] Zimmermann, *von der Erfahrung in der Arzneywissenschafft,* II. Th. IV. Buch 8. cap. 586.

[32] The reading of books which have clearly been written to stimulate the imagination can finally load up our brains with fantastic pictures: Books of heroes can create Don Quixote, and fairy tales, Don Sylvios. Weickard *philosoph. Arzt.* IV. Stück. 108. pag. (from the German)

[33] *Bemerkungen eines Reisenden durch Deutschland, Frankreich, England und Holland.* 4. Th. S. 87. 88. Cf. also Gottfr. Less *vom Selbstmorde.* Gött. 1776.

increased from day to day by the extravagant standards among so many nations.

Great indeed is the task, and it is yours to do it, O rulers and civil administrators, so that a healthy mind may reside in the healthy bodies of the citizens. May you have greater concern for youth, lest you get, instead of men, women moved to tears from every minor cause and to fatal mental depression, liable to those numerous diseases, primarily nervous, which today flourish practically everywhere. The people may at length rejoice in their existence under your care, or at least you may camouflage their troubles and submerge their worries so that while they may be unfortunate they may at least not believe themselves to be so.[34] For you must not believe that you have no obligation among those who are despairing.

The Milesians of old, when their maidens, suddenly become mad from an unknown cause, the affliction increasing from day to day so that no medicine offered for the purpose was able to assuage their madness, could restrain them from seeking death only by a decree requiring that the bodies of those hung by their own hand be dragged out naked for burial by the same rope whereby they had perished. And it will not be difficult more often to accomplish by laws that which the powers of hellebore cannot bring about. It is certainly up to you, O rulers, to relieve the physicians of responsibility among your citizens, a responsibility which is a discredit to a vigorous and strong populace; for drugs are not required where hands can bring help to the afflicted and avert threatening illness.

XIII.

A people who are shepherds or hunters never set up their homes in fixed places; nor could the constitution of our fathers in ancient times tolerate walled cities. They would have been happy had not luxurious living brought these things to them at last,[35] and had not the vices of the

[34] Slave-dealers, to whom a man is a piece of property and conservation a matter of interest, have recognized how fatal to their slaves are worry and sadness, and most of these dealers pay for the means of entertaining them and even of having them dance. Have these merchants set an example to governments, or is it the other way 'round? To investigate this is superfluous. Besides, if all strong feelings, if grief above everything is fatal to existence, the absence is not less so. Moheau. *Recherches & considérations sur la population de la France.* Chap. 8. (from the French)

[35] It is certainly true that the bodies of men living apart from communities are not entirely free from attacks of disease; nevertheless, anyone who is well acquainted with human nature readily understands that community life has brought many new ills mixed with innumerable blessings to human society. Ern. Hebenstreit, *Dissert. de Sanitatis publicae Cura apud veteres.* Lips. 1779.

Latin race thrown them into chains (a race whose impious desire always has been either to conquer by arms the most courageous peoples or to render them subject by superstition or by softening).

However much primitive peoples could change their climate according to their wishes and select for themselves now one place and now another for their habitation in accordance with a whim, still their bodies, not easily influenced by some unimportant cause scarcely felt the faults of the atmosphere or of the soil.[86] But, to tell the truth, when their skins were no longer protected by the pelt of a bear or a deer, when the colder streams were dried up to which they used to expose their bodies to make them like iron, when the freedom of the nation was lost, when the powers of mind by which the Germans of old conquered the Romans and—gigantic men—struck terror into the neighboring Gauls,[87] then the unhealthiness of the dwellings soon notably afflicted the people, and the poorness of the soil in the whole land; and they formed the groups of men now restricted to a circumscribed locality. Then at last, I am inclined to believe, endemic diseases appeared among us for the first time, since among other animals few diseases appear which are not everywhere common to the same species. Nor are bodies so easily afflicted with disease if they are exposed to freer air, and enjoy the benefit of copious transpiration, and which lastly are entirely unacquainted with the passions which profoundly afflict the spirit. Therefrom arise innumerable complaints of urban dwellings which suffer a much greater rate of mortality than people passing their lives in the country. Consequently the rulers look out too little for the health of the citizens when they prefer the more populous cities to scattered communities. The larger cities are the hotbeds of physicians, and in these predominantly is the dwelling-place of diseases, with the result that the number of physicians everywhere provides a measure of public health as well as morals. The number of physicians is increased in proportion to the excesses which the larger cities usually allow themselves and further on account of the unfortunate locations upon which they have been built up.

In truth, the same walls enclose both citizens and diseases inimical to the cities. Within the walls of a rather small city, putrid and stagnant water has killed by fever two thousand persons within a single year; in the neighboring houses it has crusted over the cooking vessels with corrosion; and meat cannot be preserved from putrefaction in them beyond a few hours.[88] The "Upsala fever" is likewise produced by noxious vapors

[86] Ant. Guil. Plazius, *Dissert. de salubritate & insalubritate habitationum.* Lips. 1781. S. 1.

[87] Iul. Caesar, *de bello gallico* Lib. II.

[88] Senac, *de recondita febrium intermittentium natura* pag. 18.

from certain ditches.[39] Of such a kind was the once well known "Stuttgart fever" in Germany. At the boundary of the city and toward the eastern plain, on which it lies open to the Neckar River at an hour's distance from it, was at one time a fishpond or rather an extensive swamp of many acres. From this place arose for many years intermittent fevers, no longer epidemic but rather endemic, intensely refractory to treatment and of long duration, which thenceforward have borne the name of Stuttgart fever. But then it happened that the swamp, having been once dried up, was converted into a pleasant meadow. From that time on intermittent fevers are so rare that not once have they merited the name of epidemic, but occur only sporadically, now here, now there, and are rather easily dealt with.[40]

When once after copious rains the waters lay stagnant around Leipzig, at the same time, as Adolphi relates, epidemic diseases appeared; fevers and purpurae (which there were listed among endemic diseases) were more frequently suffered and were more dangerous, and those which are commonly associated with petechiae.[41] Panarolus relates almost the same of a high mountainous region: In the year 1601, the Meran River left its bed, went outside the high mountain pass and stagnated in the neighboring valleys where, when it had laid a long time corrupt, it emitted by the action of the sun putrid vapors which affected all the surrounding locality and destroyed the unhappy inhabitants either by death or by flight, until at length by an order of Clement VIII the stagnant water was diverted elsewhere through an artificial conduit and the high ground restored to its former clemency.[42]

The cultivation of rice usually infects very many Italian cities with its evil breath, and in the region of Milan the country people working in flooded ground become dropsical before the fortieth year and are snatched away from the state.[43] And for this reason the metropolis enjoys a privilege whereby the growing of rice is entirely prohibited for several miles around.[44] The corruption of streams and waters in these lands, because of the flatness of the country, is so great that indeed the men who exposed themselves to these waters experienced the worst results. And for this reason in Dalmatia as early as the year 1407 it was prohibited by the statutes of Curzola "that anyone dare or presume from the middle of the month of May to the middle of the month of September to enter any

[39] Linnaeus *de febr. Upsaliensis.*
[40] *Epist.* Ros. Lentilii *ad* Lancisium *oper. var.* Tom. II. pag. 138.
[41] *De aëre, solo, aquis & locis Lipsiensibus* S. XXVI.
[42] Lancisius *de noxiis paludum effluviis* cap. I. pag. 190.
[43] *Nouveaux mémoires, ou observations sur l'Italie & les Italiens.*
[44] *Italiaenische Bibliothek* I. Th.

unhealthy stream, such as the Narenta, Boravia, Durachium, etc."[45] The air of Lintz and Cesano is in the worst repute among surrounding peoples and among the local population, since it is rare to find long-lived individuals among the inhabitants of a place of this kind, or to see among either sex, young or old, persons who have a healthy color. This indeed was never true some decades ago when, almost within the memory of those now living, the conditions described were rare since the Piave was flowing rapidly and there were no willow groves and no stagnant water.[46]

How Italy has grieved over the cities made destitute by the unhealthiness of the air! Aquilea, formerly very flourishing with a multitude of citizens so that it deserved metropolitan and patriarchal prestige, in our time scarcely retains ruins of the homes and vestiges of its ancient wealth. It has been destroyed by the force of no other arms than the corrupt air from standing water. Antonius Galatheus bewails the change in the city of Brindisium, heretofore most celebrated, in these words: "Indeed cities placed under healthy skies have been destroyed, too; just like men, cities have their fate. But the negligence of the citizens has made a scandal of this city, which never would have gained this reputation if the waters had had their drainage established." In contrast, the inhabitants of Pisa, under beneficent rulers, have begun to breathe purer air now that the swamps have been dried up, and where formerly the smallest number of mortals attained or surpassed the age of fifty years, today the city boasts very many who are far past that age.[47]

Why, then, are physicians sweating to fight the effects of such potent causes? What advantage will the states gain from a few saved by the help of the medical art, when meanwhile the greatest part of the citizens are carried away to premature death by extremely varied diseases? The rulers ought to attack the causes of so powerful an evil, and soon (you will see) the richest harvest taken away from the scythes of the physicians, and the direst misfortunes readily snatched out by the roots, if only the

[45] Giov. Targioni Tozzetti, *Ragionamento sopra le cause, e sopra i rimedi dell'Insalubrità d' aria della Valdinevole* Tom. I. p. 274.

[46] *loc. cit.*

[47] Lancisius l. c. p. 137, 138. Longevity has various causes, and usually is a standard by which health and morals can be measured. In the island of Oleron not more than five or six octogenarians were counted among 14,000 inhabitants. In the intensely unhealthy city of Marennes, one octogenarian among 5852 inhabitants; while on the other hand in the parish of Ambrun of the Condom diocese, a dry and rocky place blessed with very wholesome water, there were found to be among 130 inhabitants 20 who were septuagenarians and 10 indeed who were octogenarians. In the very healthy island of Ré, among 42 deaths, one was an octogenarian, and in the city itself, one in 34. *Recherches & Considérations sur la population,* Moheau. p. 191.

civil administrator will undertake to apply his hand and order the swamps to be drained and the ditches made deeper, and the rivers made to flow more rapidly; when this is done, in place of fevers growing up out of swamps like fungi there will soon flourish luxuriant pasture for cattle and plants with lovely stems most useful to man.

The fortified cities merit special attention here, or those which are deprived of their defenses for various reasons and now constitute the seat of peace and the arts and the Muses. The ditches which were built for warding off the enemy, no longer dedicated to this purpose, are neglected. They are half full of corrupt, fetid water and filthy mud, and are practically grown level with putrescent plants and insects; and they pollute the whole atmosphere of the city with poisonous vapors by which are engendered innumerable diseases, and even the simplest continuous fevers are converted into petechial and malignant types.

Pallas, indeed, when she was about to set up the museum of wisdom in Greece, did not select a place injurious because of thick air and ill adapted for the activity and productivity of gifted men; but rather she chose the healthiest place in Attica, commended for the best mixture of air.[48] For this reason it is the responsibility of the civil authorities alone, not of the physicians, that the healthful air be restored at rather slight expense, that the useless moats, nourishing in themselves the makings of pestilence and simmering under the heat of the sun, be converted into most pleasing gardens in which an abundance of fruit trees and flowers purifying the air with their balsam fragrance, and the most healthful vegetable foods are cultivated with great benefit.

XIV.

But how many women with well-groomed heads and superb outer garments do we not see everywhere walking proudly about, whose filthy undergarments next to the body would disgust us! An image indeed of those cities which rejoice in most fertile ground and pride themselves exceedingly because they are situated among pleasant fields, while inside they are extremely filthy and show the pattern of fortifications which have been perverted, where ditches and swamps designed to hold out the enemy in other times now suffocate the citizens themselves inside!

If the inhabitants are numerous and many among them lead a sedentary life devoted to learning, would you not say that disease would appear highly threatening to the citizens and to the men of letters? This menace

[48] Plazius l. c.

the civil authorities rather than the physicians could remove by taking care to have the polluted sewer cleaned, and once it is clean to prevent a fresh accumulation of impurities, the product of negligence, thus saving many useful citizens for the country; and also returning home the young men intrusted to them by foreigners, not only versed in sciences and arts but also strong and in good health. If frogs born and bred in the mud love the swamps and do not appear to suffer in any way from these things, nevertheless fish enclosed in these infested places are soon debilitated, lose their lustre and are sick. And indeed, for the sake of breathing purer air, even the frogs leave the swamps from time to time and, jumping over to the drier meadows, regain their strength. And if it had been given to the fishes to follow their associates on a journey undertaken for health, they too would not be injured so quickly. But lest we abuse the metaphor, we set forth as certain, in plain language, that scarcely any authority rests with the physicians in these diseases whose causes cannot be avoided by the victims; but in these matters the conservation of the state is almost entirely in the hands of the government. What physician would be able to avert the endemic inflammation of the eyes from sand blown about in the air by the wind and by inevitable fate flying into the eyes of those who frequent the public marketplace? Still, in part at least, the hand of the Emperor has found a remedy: Not very long ago he placed upon the Viennese the obligation, pleasing if they love their fellow citizens, their foreign visitors or themselves, of watering the wide places several times a day and preventing by the repeated application of water, further harmful raising of dust stirred up by the wind. Who among physicians can protect the state from the multitude of diseases which, to the great detriment of the citizens, are frequently brought in by wines or beers infected with poisons through impious fraudulence or negligence in manufacture; by meats which are semi-decayed or which come from animals contaminated with previous disease; through vessels coated with impure tin or lead? Who could preserve the lives of men from buildings about to fall in ruin, public as well as private, unless sane laws finally placed a barrier before all these threats of destruction to the state? Who else could prevent the effects on the public health of indulgence and alcoholism and all kinds of vices of the people, if not these same laws which, when given by physicians among the healthy, are often so great a cause of complaint?

XV.

Somebody might say that the physician will be more successful at least in curing the more serious diseases than we know the civil authorities to

have been in averting physical ills. We should indeed like to be able to assert this about the art which we practice.

But indeed, what headway have we made in curing canine rabies, after so much experimenting? Do successes in fact answer the tireless labors of men supreme in the art? Oh, how far distant we are, up to now, from the discovery of a specific remedy against this most distressing infection!—although it is undeniable that the skilled physician called in time is frequently able to conquer the disease, and that after various trials belladonna has manifested the looked-for miraculous affects.[40]

Let us suppose—although it is not so—that even a third part of those wounded by rabid teeth were successfully treated by physicians, after the unfortunate ones and their families had physically collapsed from sheer terror and not unjustifiable panic at what was to come. How many citizens would not the fatherly foresight of the rulers defend from this most dire affliction whenever they were willing to banish the army of dogs well-nigh innumerable in every state!

I know a city in which about ten thousand men live, with abundant prosperity, and in which at least a thousand well-fed dogs refuse bread which perhaps an equal number of poor persons do not always have an opportunity to taste. What a stench pollutes the air from so large a number of carnivorous dogs and other animals! I must speak of it. What a continual clamor of creatures ready for slaughtering! What howlings set up by dogs running in packs lacerate the ears of scholars, cruelly assailing these victims of this harsh distraction! What misuse of meats which were intended for human consumption! How shocking to modest eyes is the unrestrained lust of these very impure animals! When I think of all this, a nausea seizes me and I am moved to speak of these things although to some they may not seem the proper province of the physician. Do you not see how great a danger threatens the state if unluckily rabies from so great a number of dogs attack even one person? Even the thought itself strikes terror into me. What calamities could not so unhappy an hour bring upon a heretofore flourishing and noble youth, just as not so long ago neglect in the care of this same problem brought upon the metropolis of Bavaria! Will the keys of Hubert afford any comfort which incredible superstition dares to oppose to so great an evil even in our own times? Never indeed will such slight pleasure as we seek in a useless number of dogs and their cavorting ever compensate for the host of

[40] Cf. Burch. Frid. Munch *Diss. de belladonna efficaci in rabie canina remedio.* Gött. 1781. Also Ioh. Henr. Munch, *Kurze Anleitung wie die Belladonna im tollen Hundebusse anzuwenden ist.* Gött. 1783.

misfortunes. In respect of these things, may God will that I shall be a false prophet!

And yet, with care worthy of so great a task, the civil authorities should at last assume the responsibility of averting at least that which can be averted. Will not the industry of the authorities surpass in felicitous results all efforts of physicians? But in this case too it clearly will not suffice to pass laws. In the Duchy of Württemberg, we all know that such laws have been passed recently, laws excellent in every respect,[50] which, if followed by a physician to whose care persons bitten by rabid animals are committed, might assure the most gratifying results. Nevertheless we cannot be astonished to hear that even in that very province not so long ago about fifteen succumbed to death from rabies, as long as even Stuttgart itself has many dogs wandering about the marketplace and under the wisest laws still exposes itself to a danger of rabies which can scarcely be avoided.

XVI.

How empty of results has been the effort of physicians continuously up to now in dealing with the dire calamity of the plague,[51] and how well-favored is now the diligence and vigilance of the rulers in eliminating it almost completely from Europe![52] And had the rulers exercised the same care concerning venereal disease, perhaps we should not be deploring the

[50] *Herzogliche Wirtembergische Verordnung wegen dem Verhalten beym tollen Hundbiss und andern wüthigen Thieren.* 1780.—*Medicinische Anweisung wegen der tollen Hundewuth welcher eine Vorschrift für die Dorfbarbierer, und das Herzogl. Wirtemberg. General-Rescript die Polizey—Anstalten betreffend beygefügt ist.* Stuttg. 1782. Cf. in regard to these, the outstanding work of Ioh. Frid. Scherf, *Archiv der medicinischen Polizey* I. B. S. 151. seqq.

[51] The plague of Marseilles, which in 1721 also rioted about in the city of Toulon, whose population was 26,276, slaughtered over 16,000 of this population; not more than 4,000 recovered from the plague, so that one in five must have been saved with the help of Nature or of the medical art. See Mr. d'Antrechaus, *Rélation de la peste, dont la ville de Toulon fut affligée.* 1721. p. 339-40.

[52] In the Brassó and Fogaras regions of Transylvanian Dacia, the plague, carried in from outside in 1755, had spread to more districts; since, in fact, the authorities had quickly taken precautions and prevented all intercourse with the healthy, they thus confined the pestilence within these narrow limits. A certain Walachian escaped from an infected city and carried the plague to the town of Tartlau. The care and vigilance of the citizens, who are Saxons, brought the evil to a standstill: for they enclosed the infected homes with high and scarcely surmountable fences and protected the approach with guards, with the result that in four months the plague was completely eradicated. Adam. Chenot *de peste* p. II. More such examples could very readily be brought forward by us. Cf. Carol. de Mertens. *observationes de peste, quae patriam meam anno 1770. devastabat.*

almost universal infection of the population in certain provinces. Not even the very ignorant inhabitants of Africa are so barbarous that they fail to erect defenses against infection with smallpox when it appears in the neighborhood, though not yet in their midst; and thus they accomplish a great deal more in removing this enemy than European physicians will ever accomplish in curing the disease only now sufficiently understood. Europe harbored lepers in great numbers (after Christians, moved by religion to hatred against their fellows, wearing a cross upon the arm, had acquired the chronic disease in the Holy Land). These lepers. I say, physicians had not yet learned to cure after centuries, and not by their given command would the disease have left Europe as it did, but rather because 19,000 hospitals for receiving the diseased and segregating them from intercourse with the healthy took care of the problem, and because the sensibly decreasing virulence of the disease itself was pleased to yield to the ministrations of the government rather than to the hypotheses which physicians made up for themselves concerning the unknown nature of the disease.

XVII.

In eradicating diseases of the populace which arise from the high cost of living or from the injurious quality of the food, how very much greater is the power of the civil administrator than that of the physician! Certainly physicians have well described the very sad effects of ergot and of corrupted grains on the human species, and they have been very deserving in this. Among them should be mentioned with well deserved praise Weichman, Taube and Lentin, as the most outstanding writers on the subject in this region. Nevertheless, is it not a fact that if the civil authorities were willing to accept the responsibility for bettering the crops, and would restrain the people from using the greener grains to make a poor quality of bread, by supplying instead better grain, they would thus render superfluous the efforts of physicians, and save from illness thousands, of whom scarcely a seventh part could be saved by the best physician once they had been afflicted by disease?[58] Surely those in power in most states have not done much so far in matters of nutrition, and yet greater care in this respect would be effective and profitable in the prevention of ills, just as in almost any disease success usually has come more often from consideration of diet than from the most exquisite products of the

[58] D. Taube lost only 97 out of 697 cases of Raphania [ergotism]. See *Geschichte der Kriebelkrankheit, besonders derjenigen, welche im jahre 1770. 71. in der Zellischen Gegend Gewütet hat.* Gött. 1782 (parentheses author's).

pharmacy. Extreme poverty and the pressing need for bread in the province of Sollies-Pont in France, forces the people to convert immature grain slightly dried in the sun into the crudest kind of bread, and this is the reason why such cruel results are observed every year from ergotism all too commonly in this place.[54] Nor will the best physician be successful in any way if he undertakes the care of these people, unless he will eradicate the cause of such great ills and for a little while relieve the poverty to which they are subjected. And the same observation could be made more generally concerning many other common diseases if it were not my duty to be brief in this address and if I had more time.

XVIII.

Physicians of old humbly revered the empire of soothsayers and the power of the devil in producing diseases; and think of the huge throng of those obsessed and possessed by a demon, entrusted by the physicians themselves to the care of scoffing monks; or think of an incredible number of poor insane women burned at the stake!

Meanwhile the courts have learned wisdom from the teachings of the immortal Christian Thomasius and before him Tanner and the not-yet-well-enough-known Friedrich von Spee,[55] men who deserve the gratitude of posterity if anyone ever did. And yet, perhaps with the single exception of Weier,[56] a man wise beyond his century, the other practitioners whom at that time they often though undeservedly called "physicists," had not done very much toward correcting the judgment in regard to these matters. Why did not Gassner's rule, which began to extend beyond Swabia, have almost all physicians opposed to it? Because an incredible faith in this religious mountebank has gained him eminent supporters even in the eighteenth century! Soon all kinds of diseases were judged to be of diabolical origin, and physicians were triumphing over their enemies, whose minds, ill-disposed toward the art, had attributed to the imperfection of the art and the ignorance of the physicians the failure to accomplish what the physicians claimed an evil power had made impossible for all human endeavour.

It would have been a fine thing and much to be hoped for, if no one had taken away this comfort from the physicians, for it would have been especially helpful to the most ignorant of them. Nevertheless, the great

[54] See *Mémoires de la Société Royale de médecine, année* 1776. p. 429.
[55] *Cautio criminalis de processibus contra sagas.* Reintel. ad Visurg. 1631.
[56] Io. Wierus Gravianus, *de praestigiis Daemonum.* Basileae 1564.

German Emperor has taken it away, since he refused to acknowledge a demoniacal origin of diseases. And behold a whole genus of evil spirits dissipated by an amazing miracle, spirits who took pleasure especially in the bodies of women and at the order of Gassner enacted terrible scenes! And behold cured by hundreds girls who preferred to suffer from no disease at all unless it were caused by a devil! Indeed, when early times supported as many Gassners as there were monasteries at the time,[57] the number of those possessed, that is to say the class of maniacs, was augmented only by the unbelievable strength of the imagination, and of these the greatest part was restored to health not by the industry of the most experienced physicians, nor by the exorcism of the fire-and-brimstone theologians, but by the care of rulers well disposed toward mankind, which has exterminated ignorance and at the same time superstition as the most fertile mother of diseases with the devil himself. How much the force of the imagination is instrumental in producing the most ravaging diseases I do not believe it necessary to prove here. Many provinces demonstrate this, in which so-called missions (societies, that is, of religious men wandering from place to place) aim to move the consciences of their hearers to repentance by the force of their eloquence.[58] Hardly a district existed in which the missionary fathers did not leave behind them three or four melancholy persons who soon fell into madness. So that the famous de Sauvages himself described a definite type of melancholy which he termed religious, and which consists of profound grief, immoderate dread of the Last Judgment and a lack of the tender confidence which we owe to the fatherly mercy of God.[59]

A physician who has practiced medicine for a long time in places of

[57] Right in our lifetime almost every Cappucine monastery has its so-called exorcist-father (Hexenpater), who especially takes care of ejecting devils from the human body, and checking the activities of witches. (parentheses Frank's)

[58] The too vivid impressions which are made by extravagant preachers, the excessive fears which they create of the punishments with which our religion (the catholic faith) threatens those who break the law, bring about astonishing upsets in weak intellects. Many women were seen in the Hospital of Montelimar, attacked by madness and melancholy in the wake of a missionary meeting which had occurred in that city; they were assailed incessantly with horrible pictures which had been inadvisedly presented to them; they spoke of nothing but despair, retribution, punishment, etc. One of them was absolutely unwilling to take any remedy, imagining that she was in hell and that nothing could extinguish the fire in which she thought she was being devoured. Only with the greatest difficulty was it possible to rescue her and extinguish the imaginary flames. See *Dictionnaire Encyclopéd.* édit. Genève. *s.v. melancholie.* (from the French (parentheses Frank's))

[59] *Nosologia Methodica* Tom. III. P. I. p. 382.

this kind has reported to me that this religious melancholy has in fact much decreased among the common people where these missionary meetings no longer take place; but that it is still common wherever the more rigorous confessors control the consciences of the faithful with too great severity and so disturb the minds of these wretched people that it no longer rests with the confessors themselves to correct the errors committed against them, to abolish horrible notions of eternal damnation and punishments of hell, once they have been impressed upon the common consciousness.[60] For this reason the famous Arnold was very much mistaken when, trying to explain why the English people are more prone to mania than the Gallic peoples, he contended that superstitious religion nowhere did anything to produce this evil because the ease of obtaining absolution among Catholics did not permit them to be much afflicted with religious melancholy. Indeed, aside from the fact that it is not for the physician to wage war against any religion, and that the dreams of monks and the deliriums of Romans do not seem to constitute the essential character of Catholicism, it is entirely false to say that superstitious beliefs do not produce an overwhelming amount of mental disease; and indeed the violence of such diseases under the rule of monastic confessors, and the potency for producing religious melancholy would have given him better ammunition.[61] Aretaeus speaks of religious melancholy, saying: "Another kind of madness is found, in which the sufferers tear apart their own bodies, in a devout belief that they are gratifying their gods, just as if the gods demanded this. This kind of madness arises, strictly speaking, from a kind of persuasion."[62] The theologians who are more severe than their divine master have often deplored the fact that fatal results occurred in the minds of those who confessed, when incautiously they had allowed themselves to indulge in too rough treatment of consciences. Certainly it is impossible to imitate generally the example reported by de Sauvages of a Portuguese physician who restored his

[60] The famous Frank has given me a similar example of a woman who imagined herself to have been cast into the fires of hell: she rejected all food, uttered harsh screams and attributed her eternal damnation to the fact that her husband had been dishonest in his work, and not without her knowledge; no medicines could be forced upon the miserable woman, now reduced right down to her bones; meanwhile with the passage of time the stimuli of the conscience had been gradually dulled, and she was once more restored to health.

[61] See *Observations on the nature, Kinds, causes and prevention of Insanity*. p. 17. seqq.

[62] *De causis et signis morborum diuturnorum* Lib. I. cap. 17. In the preceding chapter indeed he had said: that melancholics either are converted to superstitious religion, or contract a hatred of this light and of life.

patient to sanity by the following trick: An angel, or rather a friend acting the part after removing the tiles from the roof, visited the melancholy one, flourishing a flaming torch in the left hand and a sword in the right, and announced to him the forgiveness of God for whatever sins he may have committed; and thereupon the patient was restored to security and health.[68] An angel salutory indeed for mankind will be he who eradicates the superstitions and deceits by which men seek to move and perturb weaker minds, so that they affirm their own authority rather than that of religion; who restores the mind and thus makes healthy minds inhabit healthy bodies. And this in truth it is not possible to expect from physicians so much as from the providence of the authorities themselves; and to a large extent it has already been so proved in Germany, where the rulers have eliminated the first source of superstition and have overthrown its seat established in the habitations of monks, thus laying the foundation of public happiness.

XIX.

How much indeed the civil authorities can accomplish beyond that which physicians can do in eradicating the preconceived ideas of the common man which are dangerous to public health! In truth, a significant number of diseases is to be ascribed to this origin if ignorance concerning matters relating to life and their own health is mainly responsible for the fact that country people are far more successful in preventing disease in their flocks than in averting ills from themselves and their families. And if even children in school were instructed about the more obvious causes of disease and warned against the very sad sequelae of errors committed in planning their lives, and impressed with examples daily placed before their eyes, surely fewer would sink themselves in gross vices whose first beginnings spring from incredible ignorance of the usual consequences of such causes. Almost the entire period of youth is spent in embellishing the endowments of the mind, while the care of the body is neglected, as if all the hope and force of the mind did not reside in the body. Let the little child not be in ignorance of what he owes to God and to his country, but before the passions which are destructive to health have spoken, let him be instructed by mature counsel concerning what he owes to himself and to his own body. So we are all persuaded that it is as necessary to teach the first rudiments of the preservation of health in the public schools as it is to inculcate into children a knowledge of letters and the meanings of

[68] *Loc. cit.*

words. Nor indeed is extensive medical knowledge required of the teachers for the performance of this duty, inasmuch as the principles which preserve health are mostly natural and the rules not numerous, whereas the things which are taught by physicians concerning the curing of disease are very many, and they are not rarely besieged by doubt. Therefore let the young persons know in time the art of defending themselves against any kind of harm which threatens disease; and besides let them be thoroughly instructed concerning the necessity of taking steps against the first beginnings of disease. And soon the death rate will become less, and to this wise plan the state will owe more citizens—by Hercules!—than the physicians, summoned too late, have ever been able to save.

If the civil authorities (and in respect to this, Sweden is indebted to its Rosenius of blessed memory, whose ashes will be venerated in future centuries) will undertake to introduce everywhere in the newspapers or also in calendars, in place of the customary trifles, warnings and precepts about diseases, both the endemic ones and those which are wont to stalk about in epidemics;—if they will order exhibited at once to all citizens the sad examples of neglect and injury and avoidable lesions;—if information were presented about poisons and the antidotes which seek to oppose these;—if a succinct method were made known in this way for aiding those endangered by asphyxia, suffocation or drowning;—if all citizens were thus put under an obligation by common law to bring mutual aid to each other whenever danger to life occurs; would they not add better results to the all-too-often useless efforts of physicians, and would not the nearly lost life be more surely saved than can ever be expected of the physician who arrives after a delay of several hours?

What an insult to human feelings it is that even in the most cultured cities at present, because of some utterly ridiculous formality, the freedom to help those who have been under water or who have been hanged by their own hand is denied to physicians until at length, after a long delay, they set about in a judicial way to examine the cadavers of these unfortunates; or that no place whatever is designated for receiving the bodies of persons who have been drawn out of the water, where an opportunity would be afforded for bringing help readily to the victims, and where suitable remedies for this use were kept! Holland and Paris exhibit a significant list of persons rescued each year from almost certain death, and it would not be difficult to reproduce such happy results everywhere. But the physicians break forth in vain clamorings, and will always do, unless the civil authorities do their part and advise people concerning their own safety, redirect minds which are preoccupied, and thus afford

a place for remedies which, being at present rude and uneducated, they for the most part refuse and reject just where they are most needed.

XX.

What have physicians not written concerning the injuriousness of corsets and clothing which interferes with the natural shape of the body![64] Nevertheless, there exists almost everywhere an error which one cannot too much deplore. Attractive girls appear like insects, the body divided almost in two by corsets. Innumerable are the harms which originate from this unhealthy concept of pulchritude by which the physician is forced to be silent, his warnings in this matter entirely disregarded (at least in this region, for in France women have long since discarded corsets). The great German Emperor now orders all deadly fortifications of corsets banished, and the feminine body to appear clothed in its own grace rather than that of the whale. And behold a sex liberated now at last from an iniquitous burden which through centuries an obviously tyrannical custom had imposed upon it! Nor indeed do I see why girls by nature well-favored should be willing to dress in this uncomfortable garment, which no one but a surgeon could propose to their less favored sisters. But indeed there are more things which should be considered by the civil authorities about clothes, and there are further arguments by which I could abundantly prove that the civil administrator is the most successful physician.[65] On this hinges a better order of medical practice in all respects in the state, and the eradication of the curse of the physicians which cannot be accomplished by drugs, but the cleansing and elimination of which is to be expected only from the ruler. But indeed these pages acknowledge rather narrow limits. At another time I may perhaps have an opportunity to consider this important matter more in detail and to expand upon it, and therefore I conclude, certain that I have amply demonstrated the soundness of my position.

[64] See especially Io. Zach. Platner *Disser. de Thoracibus.* Lips. 1735. Ballex-Serd, *Dissert. sur l'éducation physique des Enfants.* Also Frank l. c. III. Band. S. 756 *seqq.*

[65] *Memorial eines Italiaenischen Arztes über die Nothwendigkeit die Arzneykunst von der Scharlatanerie zu heilen.* Zürich. 1773.

NOTES AND COMMENTS

LAPIDARY MEDICINE

C. GRANT LOOMIS

Lapidary medicine is one of the most ancient categories of folklore. Its existence in many primitive sections of the world is still persistent, but even in the New World not all belief in some phases of its efficacy has disappeared. Modern man has made merely more cautious and tested substitutes for the old trust in amulets and in strange attributes to natural rarities occurring in the physical world. The faith in the wonder-working of the latest sulfa drug is only a shift in popular confidence in man's latest interpretation of the magical properties of derivatives from both the organic and the inorganic properties of natural phenomena.

The desertion of the old beliefs in the curative qualities of gems and strange stones of both inorganic and organic origin is pretty clearly evident in the second half of the seventeenth century in Europe, just at the time when more rational procedures were applied in many other ways of thinking. The transitional period appears very clearly in Erasmus Francisci's comments on the subject of lapidary medicine in his brief summary of some aspects of jewel and stone lore.[1] He annotates his material, especially the oldest and wildest lore often with a skeptical "it is said by some" or with a frank "some mad folk believe." Usually, however, in respect to the New World phenomena, he reserves judgment and repeats the information of his source without personal remarks.

The tabulation of the lore which follows is in no way complete, for the subject is too large for any few pages.[2] A cross-section of the subject as a whole finds a fair representation. The inclusion of some

[1] Francisci (1627-1694) was an ardent and prolific popular polyhistorian, a collector of ideas from very numerous sources both old and new, not only from the ancient world but particularly from the distant Indies, both East and West. His discussion of lapidary lore, which is adapted and rearranged in this paper, appears in his *Ost- und West-Indischer wie auch Sinesischer Lust- und Stats-Garten*, Nürnberg, 1668, pages 1199-1220.

[2] Extensive treatments of stone lore, not restricted to the medical application, may be found in the following volumes: C. J. Steiner, *Das Mineralreich nach seiner Stellung in Mythologie und Volksglauben*, Gotha, 1895; A. M. Pachinger, *Glaube und Aberglaube im Steinreich*, Munich, 1912; and M. Lorenz, *Die okkulte Bedeutung der Edelsteine*, Leipzig, 1915. Consult also, O. v. Hovorka and A. Kronfeld, *Vergleichende Volksmedizin*, Stuttgart, 1908-09, 2 vols.

Mexican beliefs which derive from generally unfamiliar sources of the sixteenth and early seventeenth centuries brings the subject closer to home. Although most of the matter may be passed over as simply naively amusing, there may be some suggestions not to be so lightly dismissed, particularly in the section on non-precious stones. Incomplete description of the stone often prevents its direct recognition, but in some instances, we may have an effective agent, if we could test its composition.

Gems

1. Agates. They have world-wide dissemination in many forms and colors. They are particularly efficacious for snake and scorpion bites. The ancients often made carved figures from them.
2. Amethyst. (In Mexican, Tlapaltehuitlal). Those from Ceylon are particularly fine. They are often found large enough to cut into small figures or dishes. Francisci says there are those who maintain that this stone is excellent for resisting intoxication. Others claim it sharpens the intellect and makes one beloved by great gentlemen. In Mexico, it was used for kidney inflammation by binding it above the organ.
3. Beryl. It ranges from green to sea-blue (emerald and aquamarine types). When pulverized and mixed with rose-water and lily-water, it is good for the eyes. Some hold that it also puts one in favor with other people.
4. Bloodstone. (Green jasper containing red spots). The color suggests by sympathetic magic the control of flowing blood.
5. Carbuncle. A glowing coal as the name suggests. A form of ruby, it is excellent against poison and an enemy of unchaste desires, for by the sympathy of opposite magic it, although glowing itself, contends against unnatural and hot desires. It has the power of inciting to anger, as well as cheering the mind. It is said to change color before imminent misfortune.
6. Carnelian. Called both sarder and sardonyx, the first because the best come from Sardinia. It is excellent in stilling the blood, in soothing severe fevers, and in making the teeth white.
7. Chalcedony. A crypto-crystalline sub-species of quartz, called variously in modern lapidary work. Francisci speaks of its variety of colors and some of its ascribed virtues, such as a ward against melancholy, fear, and sadness. It is also good against stitch in the side.
8. Cat's eye. According to Francisci, it is considered by some as a kind of opal, by others as a crystal, and by others as an agate. As its appearance suggests, it is good for the eyes. It drives away bad and frightening dreams, and likewise helps to preserve one's fortune, so that it does not grow less but rather increases.
9. Chrysoprase. Apple-green variety of chalcedony. Called popularly the gold-green-one. It is an excellent strengthener of the eyes.
10. Diamond. Called the king of jewels with unsurpassed hardness. It is said to be a poison when taken as a medicine. When worn on the finger, it makes one beloved, courageous, and high-spirited.

11. Emerald. A counter-agent, particularly against poison, the bloody flux, and rupture. A good stone against most diseases.
12. Garnet. Francisci notes the many species but says they are usually brown-red. An excellent variety is found in Bohemia. It has the power of drying up and strengthening the heart. Used by doctors in the preparation of *elixir vitae*.
13. Gold-stone. Melichrysus. A kind of chrysolite with a beautiful golden glance. Found frequently in Bohemia. It is useful for staunching blood, for apoplexy, and for many other bad conditions!
14. Hyacinth. Defined as anciently bluish-violet, probably the sapphire, now a brownish, reddish, or orange zircon. Francisci says the name comes from the flower. The stone, however, according to whether it is highly red or paler, is accounted now as a ruby and now as a garnet. It is excellent against the pestilence, for it strengthens the heart. It brings sleep and is said to create a cheerful mind.
15. Jasper. Francisci notes its many varieties, colors, and names. It is good for staunching the blood when suspended about the neck. It is good also for upset stomachs, epilepsy, and the stone. A kind of jasper is found near Meissen in Saxony and is called the writing stone because of the letters, lines, and figures appearing naturally in it. This variety is good against poison and is used by magicians to produce unusual dreams.
16. Lapis lazuli. Relieves quartan ague, strengthens the sight, brings sleep, and quiets the gout. Perhaps the last virtue is one reason kings, who often suffered from this disease, liked to have this semi-precious stone about them.
17. Onyx. According to the lore, it gets its name from the shape of the finger-nail. Those who are struck down by epilepsy or a stroke are helped to their feet by this species of quartz. It is good for the eyes and useful for kindling a fire since, by friction, it heats with amazing rapidity.
18. Opal. The rainbow of gems. It contains most of the virtues of other stones but serves particularly to strengthen the heart.
19. Ruby. Has the virtues of the carbuncle from which it is often not differentiated. Particularly efficacious against poison.
20. Sapphire. This gem is excellent for the heart. Some claim it will prevent the spread of a cancerous growth if one draws a circle around the infected place. Good for the sight, particularly in keeping measles from injuring the eyes. It resists poisons. People say that when it is worn by a lecherous fellow it loses its fire.
21. Topaz. Classed as a chrysolite, it shines like water colored with saffron. Its name comes from an island in the Red Sea where it is often found. It is said to be excellent for melancholic people and those afflicted with epilepsy.
22. Turquoise. The Turkish stone. Good for headaches and the eyes.

Non-Precious Stones

23. Aetites. The eagle-stone, so called because it is found in the eagle's nest. It is comprised of several smaller stones around a hollow which contains a loose pebble which rattles. Has the power of making easier birth.

24. Ahuachtetl. A Mexican white transparent stone found in the Panuco River area. Powdered and mixed with water it drives away fevers, particularly spotted fever.
25. Alabaster. Placed under wax, it is good for the stomach-ache. Ground to a powder and mixed with milk, it is used for diarrhoea.
26. Alcececa. A Mexican stone found along the Panuco River. It is similar to a crystal but is rather dark. It is good for diseases which disturb the mind. Its shavings, combined with the powder of a hard, black resin, make the patient sensible in a short time.
27. Belemnite. The conglomerate formed from the fusion of sand struck by lightning. Its powder or dust cures wounds. It breaks up kidney stones, and, it is said, resists nocturnal phantasies.
28. Bone-stone. So called because of its shape. By sympathetic magic, it is used to cure leg fractures.
29. Coztictecpatl. Cornerin stone. A Mexican stone, yolk-colored, which was used by the old Mexicans for heart-weaknesses. The Spaniards seem to have taught the Mexicans the virtue of this stone which they had been accustomed to wear only as an ornament.
30. Enorchis. Greek. Mentioned by Pliny. The sweetheart stone. Its shape like a testicle suggested its use as a stimulant for love-making.
31. Eztetl. A Mexican stone from the Panuco River area. It is dark to steel color and heavy. Powder from it aids diarrhoea and stomach disorders. Sprinkled in the nostrils, it stops nose-bleed as well as headaches on one side (hemicrania). The Mexicans concealed from the Spaniards the source of this stone.
32. Flesh-eating Stone. Used in Asia for consuming corpses. Quick-lime is suggested except for the fact that it was used for the soothing of gout pains, and vertigo victims found relief by licking the stone.
33. Honey-Stone. Melites. It differs from the Milk-stone only in color. It tastes a little like honey and is good for hemorrhages, particularly in women.
34. Kidney-Stone. Nephriticus. It takes its name from the fact that it helps in kidney troubles as well as cures sciatica. Like jasper, it has many colors.
35. Marcasite. Pyrites. It is also called fire-stone because of its use to strike sparks. It serves as a drying agent in plasters which are used for that purpose.
36. Mica. Water prepared with it serves women for a skin bleach.
37. Milk-Stone. Galactites. It receives its name for two reasons: because of its color, the milkiness which it throws off in water, and because it aids milk in nursing mothers when its powder is mixed with almond milk. A Mexican stone, Tlacuiloltecpatl (painted stone) is obviously not the same thing, being a white, transparent stone, spotted purple, scarlet, and green. Its virtue of increasing a new mother's milk is the same as the European variety.
38. Oak-Stone. Its name comes from its shape. It is found in green and yellow shades and is good for both constipation and dysentery.
39. Olive-Stone. Found on the Mount of Olives in Palestine and gets its name

from its likeness to a fossilized olive. Some think it cures those troubled with urinary disorders.

40. Petra Armenia. Portuguese. A stone found near Goa, India, blue to light green and used by the Moors as a purgative.
41. Petra de Cevar. Portuguese. A stone found in many places in the East Indies. The natives maintain that whoever eats a little each day with his food will keep his youth and not grow bent and wrinkled. Kings have their eating and cooking vessels made from this stone.
42. Poplar-Stone. Malachite. The similarity of its greenish color to the poplar tree gives it its name. It is also veined. It serves as a purge, strengthens the heart and stomach, and aids the gouty and epileptic.
43. Soapstone. It aids in soothing the pain of gout.
44. Rainbow-stone. Iris. It is a variety of rock-crystal and is said to be excellent for the eyes because of its natural likeness and sympathy to that organ.
45. Snail and Mussel Shells. When in their fossilized state they are ground to powder; they serve those suffering from kidney stones.
46. Serpentine is excellent against poison.
47. Star-Stone. Asteria or Astroites. The variety from India is figured with stars. There are many kinds which serve to soothe children with measles when they are tied to them.
48. Toltecayztli. Razor stone. It is a black and cinnabar-colored stone which the Mexicans used powdered and mixed with crushed crystal stone to drive away aegilops, to sharpen the vision, and to consume cataracts.
49. Tongue-Stone. The shape suggested the name. It is found in Malta. It dispels poison and like Maltese earth has astringent qualities.
50. Tzocuiomitl. A Mexican stone, shading from white to ash-gray and shaped like pumice. It smells like moist and damp earth and its taste is not bad. Those in childbed are accustomed to take it in powdered form. Both those who get a stitch in the side or are troubled with fever mix it with a quantity of Lucheanmec root. The same mixture is sprinkled in the nostrils to quiet headaches. The Mexicans at first did not wish to reveal the source of this stone, but maintained that it was the bones of angels.
51. Water-Stone. Because it includes some water in its composition, it receives its name. It is said to be helpful to those who have difficulty expelling their urine.

Organic Stones, Real and Fabulous

52. Bezoar-Stone. A stone found in the stomachs of animals, particularly those of the deer species. A Mexican stag, Teuthlalmasame, for example, is well-known in the New World. A considerable body of lore exists universally concerning this stone. It had supposedly many medicinal virtues and was sometimes confused with a mineral stone which was given the same name.
53. Dragon-Stone. This stone came presumably from the head of the fabulous creature. It served as a paramount agent against all poisons.
54. Fish-Stones. Three or four stones found in the head of the shark, otoliths, were supposed to be of assistance to those troubled with the stone. This

lore was known to the ancients. Those found in Mexico are spotted green and white, as well as solid green. The latter were considered best. Figures were cut from them, or they were bored and worn.

55. Lizard-Stones. A Mexican variety is mentioned particularly. They were found in the stomachs of a species of lizard called Gayman. They were used particularly against quartan fever, being bound on each temple.

56. Snake-Stones. Cobras de Cabelo in Portuguese. The source of this lore is found particularly in India and China. The stone is described as being lens-shaped, white in the center, and sky or sea-blue outside. When the stone was placed on the bite, it clung by itself and sucked poison until it was full, whereupon it fell off. Put into milk, it regained its color and could be used again.

57. Toad-Stones. These stones were obtained from the head of the toad, were star-shaped and of various colors. They drew poison from infected wounds and dispelled kidney and bladder stones.

MEDICO-HISTORICAL NEWS AND ACTIVITIES

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

The William Osler Medal.

The Association takes great pleasure in announcing the winner of the William Osler Medal Contest for 1944. He is Mr. Willard L. Marmelzat, a student of Tulane University School of Medicine, whose essay "The Musical Sons of Aesculapius" will be published in one of the next numbers of the *Bulletin*.

Sir Humphry Rolleston.

It is with deep regret that we announce the death of Sir Humphry Rolleston, one of the Honorary Members of the Association, on September 24, 1944 at his home in Surry, England. He was 82 years old. Formerly Regius professor of physic at the University of Cambridge and physician to the late King George V, Sir Humphry was actively interested in medical history and published a great many articles on the subject. He wrote a short history of *Internal Medicine*, New York, 1930, published as Volume IV of the Clio Medica Series, and *The Cambridge Medical School, a Biographical History*, Cambridge University Press, 1932.

CONSTITUENT SOCIETIES

Medical History Club of Charleston, S. C.

The following papers were read at meetings of the Medical History Club of Charleston, S. C. during the past year:

October meeting—Dr. D. Remsen's residence. History of Anesthetics, by Dr. R. P. Walton.

November meeting—Dr. F. E. Kredel's residence. Syphilis in the Tudor Family, by Dr. H. F. Alden.

December meeting—Dr. John van de Erve's residence. Medical caricatures, by Dr. J. I. Waring.

January meeting—Dr. John Townsend's residence. History of Psychiatry, by Dr. D. Remsen.

February meeting—Dr. F. B. Johnson's residence. History of Fractures, by Dr. J. A. Siegling.

March meeting—Dr. R. P. Walton's residence. Contributions of Physicians to early South Carolina Culture, by Dr. R. Wilson.

April meeting—Dr. R. Wilson, Jr's. residence. Anton van Leeuwenhoek, by Dr. Leon Banov.

May meeting—Dr. John Siegling's residence. Hirsute History, by Dr. John van de Erve.

New York Society for Medical History, New York, N. Y.

At a meeting of the New York Society for Medical History held at the New

York Academy of Medicine on Thursday, May 4, 1944, the following officers were elected:

President: Dr. Gregory Zilboorg
Vice-President: Dr. Claude E. Heaton
Sec.-Treas.: Dr. L. Laszlo Schwartz
Recorder: Miss Helen Bayne.

The following were elected to serve on the Executive Committee for three years:

Mr. Albert Deutsch
Dr. Edward F. Hartung

NATIONAL NEWS

Connecticut.

A herb cabinet, formerly belonging to Dr. Seth Bird (1733-1805) of Bethlehem, Conn., has been acquired by the Yale Medical Library. Dr. Bird was one of the most outstanding Connecticut physicians of his day.

Missouri.

Dr. William A. FitzGerald, Librarian and Archivist of Brooklyn Preparatory School, Brooklyn, N. Y. for 16 years, has been appointed Librarian of the School of Medicine and Assistant Professor of Medical History in St. Louis University.

Benjamin Waterhouse.

Dr. Josiah Charles Trent, Duke Hospital, Durham, N. C. is collecting material on Benjamin Waterhouse (1754-1846), one of the prominent early American physicians. He would greatly appreciate any information that is forwarded to him concerning the location of manuscript materials by or about Waterhouse.

LATIN AMERICA

Argentina.

The most recent issue of *Revista Argentina de Historia de la Medicina* (Año III, N.° II, May 1944) contains the following articles:

Juan Ramon Beltran: Arturo Castiglioni.

Arturo Castiglioni: La Historia de la Medicina y la solidaridad humana de los pueblos.

Eduardo Blanco Acevedo: La muerte de Soca.

Alejandro Chaminaud: Francisco Javier Muñiz.

Carlos Martínez Durán: La Sociedad Económica de Amigos del País, precursora de la teoría anofélica del paludismo.

L. F. Piérola Machicado: La Patología en la Historia; el fin de los presidentes de Bolivia.

Antonio Sicco: Historia de la Cátedra de Clínica Psiquiátrica de la Facultad de Medicina de Montevideo.

Héctor Zayas-Bazán y Perdomo: El arte cerámico farmacéutico.

BOOK REVIEWS

BERNARD JAFFE. *Men of Science in America.* New York: Simon and Schuster, 1944. xl + 600 pp. Illustrated. $3.50.

It is probably no exaggeration to say that in the popular view the story of American science is the story of triumphs in invention and engineering. In fact, for those who delight in labels 'Yankee ingenuity' as a national characteristic is the key to the understanding of American science.

Now Mr. Jaffe has performed a great service in writing a popular book in which the emphasis is not so much upon the applications of science as upon its theoretical aspects, and in showing the considerable and ever growing influence of contributions from this country to that field.

The lives of twenty leading figures who were born in America or did significant work here form the basis; but of necessity the great figures of science in Europe as well as a host of lesser leaders in our own country are dealt with.

The work ranges over a multitude of fields, e. g. genetics in the chapter on T. H. Morgan, biochemistry in the chapter on H. M. Evans, cosmology in the chapter on E. P. Hubble, and atomic physics in the chapter on E. O. Lawrence. But the earlier periods, for which the material is not so readily available to the general reader, are fortunately not neglected. Chapters on Harriot, Rafinesque, and Thomas Say deal with early explorations of the plant and animal life of the new country, while Franklin, Benjamin Thompson, and Thomas Cooper are chosen as representatives of early physical science. The names of Matthew Maury, James Dana, Othniel Marsh, Willard Gibbs, and Samuel Langley remind us of American contributions in such varied fields as hydrography, geology, palaeontology, mathematical physics, and aeronautics. Readers of this periodical will be particularly interested in the chapter on William Morton and the controversy over the discovery of anaesthesia.

Mr. Jaffe has gathered so much material within the covers of this book that it may seem ungrateful to speak of what he has not done. Yet one has the feeling that he has largely neglected to develop the very theme announced in the subtitle of the book, viz. 'The Role of Science in the Growth of our Country.' The author is so preoccupied with detailing the developments in some ten or twelve distinct branches of inquiry that he has little space or time to deal broadly with science as an aspect of the cultural history of the nation.

And in the nature of the case even the accounts of these several branches are not entirely satisfactory. For in certain of them, e. g. in biochemistry, genetics, atomic physics, and cosmology, great changes have taken place in relatively recent years, the main currents are as yet unclear, and the significance of individual contributions debatable. An author who tries to deal with any of these fields within the space say of forty pages can hardly avoid confusing if not misleading a lay reader at some points. It is precisely here that we should like to have an exposition by

an actual worker in the highly specialized field. But whatever the reason may be, American scientists have been generally unsuccessful as popular expositors of their own work. And so such exposition is generally left to those who cannot possibly speak with sufficiently intimate knowledge.

These considerations need not obscure the value of Mr. Jaffe's contribution in correcting narrow popular ideas of the scope of American scientific achievement. To emphasize the necessity for such correction one need only cite the fact that while men like Robert Fulton, Samuel Morse, and Eli Whitney, among American scientists, were accorded merited election to the Hall of Fame in the very first balloting in 1900, such recognition has yet to come to the overtowering genius of a Willard Gibbs.

I. E. Drabkin.

Henry E. Sigerist. *Civilization and Disease.* Ithaca, N. Y.: Cornell University Press, 1943. 255 pp., 52 illustrations. $3.75.

Disease is older than man. It is co-eval with life itself, for it is an attribute of life. A living organism is a labile entity in a world of flux and change, and both health and disease are linked aspects of this all-pervading instability. Health and disease are the expression of a continually changing relationship between the various components of which the body is composed and between that body and the external environment in which it has its being. Different working balances can be achieved in these relationships, so that health and disease are descriptive terms rather than static phenomena, and describe states in which various factors interact to produce a relative harmony or a relative disharmony. Health and disease cannot be divorced from their context, namely, the particular living organism under particular environmental conditions.

While the general conditions described above apply to man as a biological organism, human disease has still another aspect. The history of human disease is governed by the fact that man's physical nature does not enter directly into history. It does so by indirection, that is, as a process of material interaction which goes on not only between man and nature, but at the same time between men. "Pure nature" which is presupposed to all human activity (*natura naturans*) is replaced everywhere by a "nature" which is mediated and modified by human social activity, and is thus capable of further change and modification by our own present and future activity (*natura naturata*). Being "social," nature acquires a specifically historical character which varies in different epochs. Thus human disease is not a purely biological, but rather a sociobiological phenomenon and must be treated as such.

These general conceptions are not new. Physicians in earlier periods have been aware of them. Three-quarters of a century ago one of the architects of English public health clearly formulated the conditions necessary before medicine could build true national health: "The public health of a country means the health of its masses, and the masses will scarcely be healthy, unless to their very base, they be at least moderately prosperous" (Sir John Simon in his *Sixth Report to the Privy*

Council, 1864). Similarly, Daniel Drake in his *Discourses* pointed out that: "Medicine is a physical science, but a social profession. What skeletons are to the comparative anatomist, and plants to the botanist, people in health and disease are to the physician. Both his elementary studies and his after duties are prosecuted in their midst and can be pursued nowhere else."

It is this general approach to the history of human disease which underlies the volume on *Civilization and Disease* by Dr. Sigerist. This book is based on the Messenger Lectures delivered by the author in 1941 at Cornell University. In these lectures Dr. Sigerist undertakes to correlate the history of medicine with the history of human socialization. The method by which he does this is to seek out and analyze the various points at which civilization (or human culture) and disease have interacted and affected each other. This program is carried out in detail for the fields of economics, social life, law, history, religion, philosophy, science, literature, and art. Throughout the entire volume there is clearly manifest the author's profound interest in and knowledge of the sociological aspects of health and disease. This is clearly shown in the first chapter in which malnutrition, economic inequality and the consequent evils are described. These considerations lead logically to a consideration of disease and economics. All in all Dr. Sigerist has dealt with his subject in a masterly fashion and the volume will undoubtedly have a wide audience.

For the medical historian in particular, this volume has still another and more technical point of interest. What Dr. Sigerist has done in his book has been to lay out a program for research. It is evident that there are still many problems to be solved in this field and Dr. Sigerist has performed a real service by pointing out paths for further investigation.

GEORGE ROSEN.

ALEXANDER H. and DOROTHEA C. LEIGHTON. *The Navaho Door. An Introduction to Navaho Life.* Cambridge, Mass.: Harvard University Press, 1944. xviii + 149 pp. 36 ill. $4.00.

The authors, originally psychiatrists and pupils of Adolf Meyer, now among the few successful standard-bearers of the new "applied anthropology," are by this time so well known that they need not be introduced to the reader.

The primary purpose of this book is not dry scientific analysis, but it is meant to give to Indian Service workers and to a larger public a better understanding of the techniques and problems involved when we have to deal with a minority of a different cultural background, particularly in the medical field. Not only is the book very successful in reaching this goal so rich in more general implications, but it contains numerous ideas and materials which make it valuable reading also for those more interested in the purely scientific questions of primitive mentality and primitive medicine.

The authors give first a short but rich description of the historical, environmental and ideological background of this largest group of North American Indians (50,000) who in spite of persecution and living in a desert have increased

more than threefold during the last 70 years. The administrative set-up is sketched. The authors try to explain some perplexing character traits of the Navaho by the above named factors.

Methods of bringing white medical care to the Navaho in hospital and out-patient work without coercion and in using elements of his own cultural background are then discussed in greater detail. The medical field is of particular importance and significance in collaborating with the Navahos, as their religion centers around the problem of disease.

Three Navaho life histories are a very valuable illustration to the more general statements. The book ends with a strong appeal for a fair deal with the Navahos which again are menaced by certain interests, for the sake of the future of all of us.

The "Navaho Door" is extremely well written and illustrated. Though, from W. Matthews to C. Kluckhohn, so much excellent work has been done on the Navahos, this small book is a very valuable new contribution and contains a great message.

E. H. ACKERKNECHT.

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